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VOL. I.—16TH YEAR. SYDNEY, SATURDAY, APRIL 13, 1929. No. 15.

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THE INTRADERMAL TEST IN HYDATID DISEASE: A CRITICAL ANALYSIS OF ITS RESULTS.

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Introduction.

The material for the present analysis was derived from the records of patients whose responses to various biological tests for hydatid disease were investigated at the Walter and Eliza Hall Institute of Research by different workers over the period 1921 to 1926. All the cases recorded by the writer[1] and many of those reported by Dew, Kellaway and Williams[2] have been included. Unfortunately, owing to the fact that insufficient data were available for definite diagnosis, many cases in which a test was carried out in these five years, were of necessity discarded.

Puntoni[3] obtained no reaction in three patients with echinococcal infestation tested with hydatid fluid, using a technique similar to that of the von Pirquet test for tuberculosis, as well as in one case in which the fluid was introduced into the conjunctival sac in an attempt to obtain an ophthalmic reaction. Boidin and Laroche[4] used filtered hydatid fluid heated on two occasions to 56° C. The fluid was obtained from patients at operation and was injected intradermally in two patients with hydatid disease and also in healthy subjects. A separate injection of saline solution was used as a control. They concluded the results were not specific enough to be of value.

Casoni[5] obtained indefinite results with the inoculation of the fluid into scratches on the skin, but in seven patients with hydatid disease he observed the occurrence of a delayed reaction following the intradermal injection of 0·5 cubic centimetre of hydatid fluid. One of eighteen patients with no evidence of hydatid infestation also gave a delayed response.

Testi and Zoli,[6] Gasbarrini,[7] Luridiana,[8] Pontano,[9] Serra,[10] Botteri,[11] Cignozzi,[12] Manassei,[13] Bacigalupo and Grosso,[14] Giampaolo, [15] Deusch[16] and others have reported from 70% to 100% of delayed reactions to this test in patients with hydatid disease. No reactions were observed with thick-walled or suppurating cysts or following desensitization from excessive absorption of antigen.

The writer[1] reported 55·5% of delayed reactions in 72 tests performed before or after operation on 67 patients proved to have hydatid disease and noted that rupture or suppuration of the cyst usually led to suppression of the delayed response. Surgical interference with the cyst had a similar effect for a short period after operation, though later the response usually became positive and often remained so for years. The immediate wheal observed in some cases was regarded as an abortive response of doubtful significance.

Magath,[17] using a technique similar to that of the von Pirquet test, observed the appearance of the immediate reaction to hydatid fluid in each of three patients with hydatid disease, while it was absent in twenty patients with no evidence of this infestation. Ithurrat and Calcagno[18] reported that in only four of 137 patients injected intradermally with 0·2 to 0·6 cubic centimetre of hydatid fluid the results of the immediate reaction did not correspond with the operative findings. Sixty-three of sixty-five patients with hydatid disease gave a positive response, while one with a thin-walled pulmonary cyst showed no immediate reaction. The other patient had been operated on for a hydatid cyst of the brain and twelve days later failed to respond to the test, though twenty-three days after operation the reaction was present. Only two of the seventy-two patients in whom no evidence of hydatid disease was found at operation, gave immediate reactions. In one of them the complement fixation test also gave a positive result and though operation revealed a malignant growth, a hydatid cyst may have been latent in another situation. The other patient gave no response to the complement fixation test while the eosinophile cells comprised 6% of the leucocytes. These observers consider control injections of saline solution or other substances unnecessary. They never observed a wheal larger than a two centime piece.

Trenti,[19] using fluid from human cysts, obtained immediate reactions in 18 of 21 patients with hydatid infestation and in 15 with fluid from cysts of sheep. The delayed reaction was present with both fluids in ten patients.

Dew and Williams[20] noted the frequent appearance of the early wheal and with Kellaway[2] found 22 positive results in 24 uncomplicated preoperative cases. They rightly emphasized the value of the immediate response, but unfortunately this led in some quarters to neglect of the delayed reaction, as evidenced in the later cases of this series. They thought that immediate reactions in the absence of hydatid disease were liable to occur in cases of jaundice with pruritus, generalized skin disease and in urticaria related to abnormal sensitiveness to a foreign protein. Kellaway[21] later added cases of dermatographism to this group.

Prado[22] found the reaction accurate in the majority of cases, but reactions occurred in patients with highly sensitive skins and in some cases of tuberculosis.

Lemaire and Thiodet[23] obtained 21 positive results in 24 patients with hydatid disease and also in three of 39 patients with no evidence of this affection. The diagnosis in these three was in one an amœbic abscess of the lung, in another pleuropulmonary tuberculosis and in the third carcinoma of the liver. The two pulmonary patients reacted with a control injection of peptone broth. Dialysed hydatid fluid gave no result in both these patients and the routine use of such fluid was recommended for the test.

Mogena[24] and Gernez[25] found the test reliable, as did Hercus,[26] reactions occurring invariably in

their respective series of twenty-five, three and six patients with hydatid disease. Hercus found that a positive response might occur in cases of hay fever or asthma in the absence of hydatid infestation and advised the control injection of 1% peptone to prevent misinterpretation of these reactions.

Burnet, Caillon and Brun[27] in their experience with different antigens obtained most unsatisfactory results. They used fluids from human, bovine and ovine sources; some were fresh and unfiltered, others were filtered and sealed in ampoules with or without antiseptic. In 106 patients with various diseases other than hydatid, 35 (33%) immediate reactions were recorded with human fluid, while 25 of these also reacted with peptone broth. Twelve (11%) showed a delayed response. Of 37 patients with hydatid disease, an immediate reaction with human and animal fluids occurred in only 14 patients (37·8%), while a delayed response was found in five (13·5%). Reactions with broth occurred in every patient who reacted with hydatid fluid. They concluded that the intradermal test for hydatid disease was neither constant nor specific and was of no value in diagnosis.

Technique Adopted for the Intradermal Test.

The various workers who performed the test in this series of patients, all used the same technique which is briefly described below.

The antigen used consisted of pooled hydatid fluid obtained by aseptic puncture of normal fresh pulmonary and hepatic cysts of sheep, care being taken to avoid contamination with serum. The fluid was filtered through a Berkefeld filter, tested for sterility and stored in small sealed ampoules on ice.

The skin was sterilized with alcohol. A fine hypodermic needle was introduced, bevel uppermost, into the skin of the arm or forearm and 0·3 to 0·4 cubic centimetre of the fluid was injected intradermally so as to produce a white raised area about one centimetre in diameter resembling pig skin. At a distance of a few centimetres a control intradermal injection of the same amount of normal saline solution (0·85%) raised a similar pig skin-like area.

In a typical immediate reaction the wheal caused by the saline solution injection faded rapidly, while that produced by the hydatid fluid increased in size and usually manifested irregular pseudopodial outrunners. It generally reached its maximum dimensions in about twenty minutes and was surrounded by a zone of erythema which faded with the wheal in an hour or so. The increase in the size of the wheal was regarded as the characteristic feature of the immediate reaction, but unfortunately no standard as to what increase constituted a definite response was ever laid down.

In the absence of a reaction, the original raised area increased very slightly, if at all, no outrunners appeared and the wheal usually faded in a short time. A moderate zone of erythema was often present.

When the delayed reaction occurred, the immediate reaction was followed, usually after an interval of some hours, by the appearance round the site of injection of the hydatid fluid of an area of erythema with subjacent induration due to œdematous infiltration of the part and local accumulation of eosinophile leucocytes. In eighteen to twenty-four hours the classical signs of inflammation with the exception of pain and tenderness were usually present, though redness was occasionally absent. The indurated area often had a very definite edge and at the margin of the surrounding erythematous zone capillary injection was frequently observed. The reaction had usually disappeared within thirty-six to seventy-two hours, though in the more severe types it persisted for a week. In these latter cases there were often a few vesicles at the site of inoculation and the local heat and redness with extensive œdema, perhaps extending from the shoulder to the hand, simulated erysipelas or cellulitis. Fever and tachycardia were, however, absent, though intense local itching and occasionally a dull aching pain were present. The axillary glands were not affected. Hercus[26] has recorded two cases in which the reaction involved the arm, leg and trunk on the side injected. In this series none showed a reaction extending further than the shoulder.

In the absence of a reaction the site of injection was usually difficult to find twenty-four hours after the test, at which time the delayed reaction was usually read. Occasionally a reaction with the above characteristics appeared within six hours and had faded by twenty-four hours, but such cases were few and in this analysis only the results at about twenty-four hours have been recorded.

Infiltration over an area of 3·75 centimetres (one and a half inches) square was recorded as a slight delayed reaction, provided there was no induration about the site of the control injection. There was usually a surrounding zone of erythema, but erythema alone was not interpreted as a positive response.

The Reactions in Persons with Proved Hydatid Disease Before Operation.

In Tables I and II are shown the results of this test in persons with hydatid disease before operation, that is, patients whose cysts had never previously been subjected to operative interference. Only those cases are included in which the diagnosis was subsequently confirmed at operation or *post mortem* or by the finding of hydatid membrane or scolices in the case of ruptured cysts. Unfortunately the same rigid criteria cannot be applied to patients showing no reactions, nor to all patients giving reactions in the probable absence of hydatid infestation. The number of these latter, therefore, must appear unduly large in proportion to the hydatid cases in the series, for it has been necessary to exclude from Tables I and II many probable but unproved cases of hydatid disease.

There was difficulty in the classification of the pathological condition of some cysts owing to insufficient data relating to their state at operation. The greatest difficulty was to decide whether degeneration or suppuration was present. Hepatic cysts in

which the fluid was bile stained have been recorded as ruptured. Many patients suffered from multiple infestation in different organs and the pathological condition of the different cysts was not always identical in the one patient. In such cases the cyst was classified only under a single viscus, while the pathological state was recorded under the one most likely to have affected the response to the test, that is, if one cyst was ruptured and another was normal, the results of the test were entered under the heading of ruptured cysts.

TABLE I.
Preoperative Reactions in Patients with Uncomplicated Hydatid Cysts.

Pathological Condition of the Cyst.	Site of Cyst.	Immediate Reaction.		Delayed Reaction.	
		Patients Examined.	Number in which Reaction Occurred.	Patients Examined.	Number in which Reaction Occurred.
Normal ..	Liver ..	12	9	7	3
	Peritoneum	1	1	1	0
	Muscle ..	1	0	1	1
Probably normal (not recorded)	Lung ..	1	1	1	1
	Liver ..	4	4	3	1
	Peritoneum	1	1	2	1
Degenerating	Lung ..	1	1	—	—
	Liver ..	9	6	7	6
	Peritoneum	1	1	—	—
	Bone ..	2	2	2	1
	Muscle ..	2	1	—	—
	Kidney ..	—	—	1	0
	TOTAL ..	35	27=77%	25	14=56%

TABLE II.
Preoperative Reactions in Patients with Complicated Hydatid Cysts.

Pathological Condition of the Cyst.	Site of Cyst.	Immediate Reaction.		Delayed Reaction.	
		Patients Examined.	Number in which Reaction Occurred.	Patients Examined.	Number in which Reaction Occurred.
Ruptured ..	Lung ..	6	6	6	4
	Liver ..	10	8[1]	5	1
	Neck ..	1	1	—	—
Suppurating..	Lung ..	2	2	3	0
	Liver ..	7	7[2]	13	2
	Muscle ..	1	1	—	—
	TOTAL ..	27	25=92·6%	27	7=26%

[1] In six of these cases the only evidence of rupture was bile staining of the cyst contents.
[2] All seven patients were jaundiced.

Of 62 patients examined before their first operation for hydatid disease 52 (82·9%) gave an immediate reaction. Only 21 (40·4%) of 52 cases tested gave a delayed response.

The Site of the Cyst.

Pulmonary Cysts.

Immediate reactions were obtained in all ten patients with pulmonary cysts, a finding probably related to the fact that in eight of the ten cases suppuration or rupture had supervened. The relatively early onset of complications in pulmonary cysts suggests that a positive immediate response will be found in the majority of these cases.

Hepatic Cysts.

In 42 patients with cysts in the liver the immediate reaction was positive in 34 (81%). Ten jaundiced patients in whom a positive immediate response was obtained, were included, for there is no evidence in this survey that jaundice *per se* leads to reactions in the absence of hydatid infestation. A few jaundiced patients with hydatid disease failed to react to this test.

Cysts in Other Situations.

All three patients with peritoneal cysts and both patients with hydatid disease of bone gave immediate reactions, while two of four patients with cysts of muscle gave a positive response to the test. The figures are too small to enable any definite conclusions to be drawn, but they suggest that the site of the cyst has a relatively unimportant influence on the immediate reaction, save perhaps in cysts of muscle.

This also seems to be the case with the delayed response, for in this series delayed reactions were found in 50% of pulmonary cysts, 37% of hepatic cysts and 40% of all cysts. One patient with a cyst in the lumbar muscles gave a positive delayed response, but no immediate reaction. A similar finding has been noted in a more recent case of a cyst in muscle (not included in this series).

The Pathological Condition of the Cyst.

Though the site of the lesion may have a comparatively unimportant influence in this test, the pathological state of the cyst is of great importance.

The Immediate Reaction.

In uncomplicated cysts (Table I) an immediate response was found in only 27 of 35 patients (77%), while with complicated cysts (Table II) an immediate response was present in 25 of 27 patients (92·6%). Of the latter patients the two who failed to react, had suffered recently from rupture of the cyst followed by a generalized urticarial rash. In one an hepatic cyst ruptured into the peritoneal cavity seventeen days before the test was done and in the other the cyst had ruptured into the intrahepatic biliary passages twenty-two days previously. In the latter case both phases of the test were strongly positive some three years later, though the result of the complement fixation test, positive before operation, had then been characterized by no reaction. In none of the other patients with ruptured cysts was there a history of any urticarial rash following the onset of the complication. These two cases fall into line with two reported by Hercus[26] in which both phases of the reaction were absent in patients with recent rupture of the cyst followed by urticaria, though in his cases both immediate and delayed responses became strongly positive within two weeks of the rupture. Patients with rupture or suppuration of a cyst invariably give a positive immediate response to the test, except when recent rupture has been followed by a generalized urticaria.

The Delayed Reaction.

In 25 patients with uncomplicated cysts (Table I) the delayed reaction was present in 14 (56%), but of 27 patients with complicated cysts (Table II) only seven (26%) gave a positive response.

Rupture of a pulmonary cyst into a bronchus had no constant effect on the delayed reaction. Of six such patients two gave no delayed reaction when first tested two and eleven months respectively after rupture, but slight reactions were recorded on another occasion in each instance. In three of the four showing definite delayed reactions, rupture had occurred from two to three weeks previously. The fourth patient at intervals brought up hydatid material and on two occasions the result of the test was positive a week later, while positive results were also recorded at different times up to a year after rupture.

None of the three patients with definitely ruptured hepatic cysts gave a delayed response to the test. One of the patients with bile stained cysts gave a reaction and here a barren non-infected cyst was found at operation ten days later.

In two of the three patients with suppurating pulmonary cysts the history suggested that rupture might have occurred previously. All three failed to give a delayed response to the test.

Of the thirteen patients with suppurating hepatic cysts only two gave a delayed response and in both the reaction was slight (P+). In one of these the stage of suppuration had not been reached, but *Bacillus coli* was grown from the cyst fluid. In the other two months elapsed between the date of the test and operation, but the history suggests that the cyst was suppurating at the time of the test.

In the case of pulmonary cysts the onset of acute complications led to no constant effect on the delayed Casoni reaction, but in hepatic cysts suppuration or rupture invariably led to a diminution or disappearance of the delayed response. In 17 patients with uncomplicated liver cysts the delayed reaction was observed in ten, while in 18 patients with complicated hepatic cysts only one gave a definite and two a slight response.

When a cyst has recently undergone suppuration or rupture in a patient not previously operated on for hydatid disease, the various biological tests give such characteristic results that the state of the cyst can usually be diagnosed on these findings alone. In such a case the intradermal test shows a positive immediate, but no delayed response, while with the complement fixation test the fixation of a large amount (15 minimum hæmolytic doses or more) of complement and with the precipitin test the formation of a definite precipitate within four hours at room temperature show the presence of large quantities of circulating antibodies. Similar findings are frequent in the second week after operation.

THE REACTIONS IN PERSONS WITH HYDATID DISEASE AFTER OPERATION.

The Immediate Reaction.

Of 116 patients tested at periods varying from one day to forty years after operation for hydatid disease 30 were proved to have recurrent cysts. Many patients were tested after different operations and at various intervals after the same operation, hence the number of tests (173) exceeds the number of patients (116). Table III shows that in 17 of these tests no reaction occurred (9·8%).

TABLE III.
Post-operative Reactions.[1]

Time After Operation.	Immediate Reaction.		Delayed Reaction.	
	Present.	Not Present.	Present.	Not Present.
Day of operation..	5 (2)	3 (0)	8 (2)	3 (0)
1 to 9 days ..	22 (6)	1 (0)	10 (3)	15 (4)
10 days to 2 months	18 (7)	2 (0)	14 (2)	17 (8)
2 months to 1 year	32 (6)	0	36 (6)	8 (2)
1 to 10 years ..	72 (13)	10 (?1)	55 (7)	28 (5)
10 years onwards..	12 (5) (?10)	4 (2)	6 (4)	6 (3)

[1] In patients with multiple operations the results of the test were included separately after each operation. But after each operation, if the test was performed more than once in the time covered by one division of the table, only one result was included, unless the results varied at different tests.
The figures in parentheses indicate the number of cases in which further cysts were proved to be present.

From One Day to One Year After Operation.

In 75 tests performed within one year of operation, in only three (4·0%) was no reaction obtained, all within four weeks of surgical interference. Lack of the usual postoperative absorption of antigen was evidently the explanation in these three cases. One patient had a cyst of the gluteal muscles removed a fortnight before. Two days after an operation at which a degenerated hepatic cyst was evacuated and closed without drainage, another patient failed to respond to both complement fixation and Casoni tests and these reactions were still absent four and a half years later. Apparently the contents of this degenerated cyst possessed no antigenic properties. The third patient failed to show an immediate reaction twelve days before operation at which a bile stained cyst containing degenerated scolices was drained. Four weeks after operation no reaction was obtained with both complement fixation and Casoni tests. The absence of the usual post-operative rise in the complement fixation titre of the serum indicates lack of absorption of antigen and twice within the next three weeks no reaction was obtained with this test.

Hercus[26] states that immediately following operation both phases of a previous reaction may disappear for a variable period. In this series, however, no patient known to give an immediate reaction before operation failed to respond when tested within nine days after operation, though two patients failing to give a preoperative response yielded a reaction one and five days after operation respectively. The seven patients tested on the day following operation all gave immediate reactions, as did fifteen others tested between the second and ninth days afterwards. Excessive post-operative absorption of antigen would have the same effect as rupture of the cyst and in two cases mentioned previously no immediate response was present within three weeks of rupture.

TABLE IV.
Results of Tests on Patients more than Ten Years after Operation.

Number.	Complement Ordinary Method.[1]	Fixation Ice-box Method.	Precipitin Test.	Casoni Reaction.		Clinical Evidence of Recurrence.	Previous Operation. Site.	Time from Operation to Test.	Present Operation. Site and Situation of Cyst.
				Immediate.	Delayed.				
1	−	−		−		No record.	?	23 years	No operation.
2	−	−		−		Nil.	Lung	28 years	Cholecystitis. No evidence of hydatid.
3	−	−		−		X ray calcified cyst liver.	Liver	40 years, treated by tapping	Calcified hepatic cyst with semi-solid contents.
4	−	−		−	−	Mass continuous with liver.	Liver	20 years	Calcified cyst of liver.
5	−	−	−		−	Persistent sinus.	Femur	27 years	Large firm walled hepatic cyst.
6	−	−	−	+	−	No record.	Liver	16 years	No operation.
7	−	−		+++	−	Negative.	?	30 years	No operation.
8	−	−	−	+++		Liver enlarged.	?	20 years	No operation.
9 (*a*)	−	−			+	Cysts discharged through scar: (*a*) 2½ years and (*b*) 7½ years ago.	?	11 years	No operation.
(*b*)	−	−		+++	−			16 years	
10	+++	+++	++	+++	+++	Hæmoptysis. No record of physical signs.	Lung	14 years	No operation.
11	+++	+++		+++		Hydatid thrill.	Liver	28 years	No operation.
12	+++	+++		+++	+++	Mass continuous with large liver.	Liver	26 years	No operation.
13	+	++[2]	++	+++	+++	Coughing up cysts.	Liver	13 years	Ruptured cyst of lung.
14	+	++[2]	+++	+++	+++	History suggestive. Signs of pleural effusion.	Liver	11 years	Suppurating cyst of lung.
15			−	+++		Liver enlarged.	Liver	31 years	Uncomplicated cyst of liver.
16	−	++[2]		+++	+++	Mass under old scar.	Liver	11 years	Hepatic cysts. One normal and one degenerated.
17	−	−		+++	−	Hydatid thrill.	Lung	30 years	Uncomplicated cyst of muscle.

The sign − means that no reaction was obtained.
[1] With ordinary method of the complement fixation test, P+ means that three minimum hæmolytic doses and P+++ that six minimum hæmolytic doses of complement are fixed.
[2] In these three cases the ice-box method was not carried further than six minimum hæmolytic doses of complement P++. An ice-box result of P+++ means that at least eight minimum hæmolytic doses of complement are fixed.

Summary.—Absence of an immediate response to this test may be found within a short period of operation:

1. When the usual absorption of antigen after operation does not take place and where the preoperative test yielded no reaction. Failure to absorb antigen occurs when the cyst has been removed whole or when the cyst contents possess no antigenic properties. This was the probable explanation in all cases in the series characterized by failure to yield an immediate response within a few days of operation.

2. When excessive absorption of antigen has occurred either as a result of surgical interference or shortly before operation through rupture of a cyst followed by an urticarial rash. In the latter circumstances the reaction would also be absent in the preoperative period after rupture.

From One to Ten Years After Operation.

From one to ten years after operation immediate reactions were found in 72 of 82 tests. Thirteen of these patients harboured further cysts. In only one of the ten in whom the reaction was absent, was there any evidence to suggest that other cysts were present.

Postoperative failure to absorb antigen explains the negative findings in three cases. In two the cyst was removed whole, while the other had also shown no response two days after operation for a degenerated hepatic cyst as detailed above. The complement fixation test in these patients gave no reaction. They are probably cured.

In two patients operated upon three and five years before (one for a cyst in the spleen) no data concerning the operations are available.

Histories of the remaining five patients giving no reaction are briefly summarized as follows:

In D.L. a normal pulmonary cyst was drained. Seven years later no reaction was obtained with both phases of the Casoni test and with the complement fixation test which had yielded a strong reaction eight days after operation.

J.W. showed no immediate response six days before aspiration, but five days after this operation a reaction was present. Later infected cysts in the thigh muscles were excised. Twenty-seven months afterwards no reaction was obtained with complement fixation and intradermal tests.

The remaining three patients with hepatic cysts all gave preoperative immediate reactions. In M.J. the cyst was drained and thirteen days later the results of the immediate intradermal and the complement fixation tests were positive, though both failed to yield a reaction twenty-two months afterwards. In G.J. a normal and a degenerated cyst were treated with formalin and closed without drainage. Thirty-five months later, the complement fixation and both phases of the Casoni test gave no reaction. None of these patients gives clinical evidence of further cysts and they may reasonably be considered cured.

The last patient, M.D., had an uncomplicated cyst treated with formalin and closed without drainage. Thirty-seven months later there was no reaction with either phase of the intradermal test, though the serum fixed between three and four minimum hæmolytic doses of complement in the presence of hydatid antigen (P+±). This suggests that the patient was not cured, though no cysts could be located by clinical or radiological evidence.

In these patients, except perhaps M.D., the absence of the immediate reaction appears to be related to cessation of absorption of antigen. The immediate reaction may disappear within one to two years of

operation. The postoperative disappearance of this reaction, when it has been present prior to or at an earlier period after operation, almost invariably indicates that the patient is cured, provided that recent rupture of a cyst leading to temporary desensitization of the tissues is excluded. In some cases, however, absence of reaction may be found in a patient harbouring a dead parasite. This disappearance of an immediate reaction is of more value as an index of cure than a similar result with the complement fixation test (see Table IV).

From Ten Years After Operation Onwards.

Table IV shows the results of investigations performed on seventeen patients more than ten years after operation for hydatid disease.

All four patients yielding no immediate reactions also failed to react with the complement fixation test. In two a calcified cyst which had obviously been dead for years, was found. One patient was apparently cured and in one the data are insufficient to allow any conclusion to be drawn. These failures to react are to be attributed to the non-absorption of antigen. In patients in whom more than ten years have elapsed since operation for hydatid disease, the absence of an immediate reaction indicates that the patient is cured or harbours a parasite which has been dead for some time.

Of twelve patients giving an immediate response there is no record of the clinical condition in one and another shows no clinical evidence of hydatid disease. Both fail to react to the complement fixation test and may possibly be cured.

In the remaining ten cases, the evidence points to the presence of further cysts. In five this has been proved by operation, in three others all investigations agree in pointing to this conclusion and in two (Cases 8 and 9) the clinical evidence suggests recurrence though the complement fixation test yields no reaction. However, in four cases of recurrence proved by operation the latter test gave no reaction in two and weak (P+) reactions in the other two with ordinary technique,[1] though in three the ice-box method gave a more strongly positive (P+ +) reaction. The precipitin test in this table gives results comparing favourably with those of the complement fixation test.

A positive immediate response more than ten years after operation for hydatid disease suggests the need for very complete investigation for further cysts, which will be found in the majority of such cases. Reactions at this time with complement fixation or precipitin tests certainly indicate recurrent or residual cysts, though failure to react does not exclude them. Similar findings were noted in this small series with the delayed response to the intradermal test.

[1] In the ordinary technique of the complement fixation test, the first stage of the reaction is carried out at 37° C. for one hour. Sensitized red blood corpuscles are then added. With the ice box method, fixation proceeds overnight in the ice chest at 4° to 8° C., the hæmolytic system being added next morning. Readings are made when all the controls including non-reacting sera have undergone complete hæmolysis.

Summary.—Immediate reactions were absent in 17 (9·8%) of 173 tests performed on patients at varying intervals after operation for hydatid disease. In only one of the seventeen cases was the complement fixation reaction at this time found to be positive (P+ ±). These results are practically always due to lack of absorption of antigen, probably over a period of many months at least. When the cyst has been removed whole or when a cyst which possesses no antigenic properties has been treated, such results may be expected at any time after operation in patients who failed to manifest a preoperative immediate response.

Failure to react is also noted many months or years after operation, often in patients who were known to have absorbed antigen in the preoperative or early postoperative period. Such findings are regarded as evidence of cure where the occurrence of recent rupture of a cyst leading to desensitization of the tissues can be excluded. They depend on lack of absorption of antigen over a minimum period of many months. Hence they may also be found in the presence of a dead cyst.

In the first few weeks after operation the immediate response may be absent following excessive absorption of antigen from any cause. This may be the result of preoperative rupture of a cyst leading to an urticarial rash and desensitization of the skin and subcutaneous tissues. In such a case the result of the test in the preoperative period after rupture of the cyst would also be a failure to react. If operation led to absorption of excessive amounts of antigen, similar findings might result in the early postoperative period, but no such cases occurred in this series.

The Delayed Reaction.

On the Day of Operation.

Table III shows that three of the eleven patients injected intradermally with hydatid fluid on the day of operation failed to show a delayed response next day. One of these a few days previously had given a reaction. Three showed only a slight response, though one of them some days before had given a strong reaction. Four of the five patients giving well marked reactions had shown similar results a few days previously. The other patient (J.B.) failed to react twenty-three days before, but showed a positive response when tested on the day of operation. The reaction probably changed at some time before operation in the interval between the tests, for there is no other example in the series of a patient showing a preoperative failure to react and giving a positive response within twenty-four hours of surgical interference when tested with the same antigen on both occasions. The available evidence suggests that a preoperative reaction usually disappears after operation. The above results indicate that usually some hours and, as will be seen later, occasionally some days elapse after operation before the delayed reaction disappears.

From One to Nine Days After Operation.

Of twenty-five patients tested between the first and ninth days after surgical interference, fifteen failed to give a delayed reaction. Six of these were tested before operation, four giving positive results and two failing to react. Of the four showing preoperative reactions, one was tested on the day after operation, another on the fourth and two on the eighth day afterwards. Of the other two patients tested on the day after operation, one failed to show a preoperative response and the other had a suppurating hepatic cyst, so the reaction in this case would almost certainly have been absent before operation.

The change from a preoperative reaction to a failure to react in the first few days after surgical intervention is apparently due to the desensitization of the subcutaneous tissues following increased absorption of antigen at operation and in the early postoperative period. As will be seen later, this absence of the delayed response is only temporary and within ten days to a few months is followed by the appearance of a well marked delayed reaction.

Ten patients gave a positive response between the first and ninth days after operation. In six of these neither the operation nor the state of the cyst was such as to permit any increased absorption of antigen, so no alteration in the delayed reaction would be expected. In four the cyst was removed whole. In one an abscess in the scar of a previous operation for hydatid disease was opened, but no hydatid material was found in the discharge and a later operation failed to reveal any cysts, while in the other a ruptured suppurating cyst of the lung was drained.

In four other patients, tested on the day after operation at which some absorption of antigen certainly occurred, the result was still positive. Two were not retested for two and seven months respectively when strong reactions were obtained. The first gave no reaction with stock hydatid fluid from sheep nine days before nor on the day after operation. A normal cyst of the liver was evacuated and closed without drainage. On the day after operation a mild positive response to his own cyst fluid was observed. It is reasonable to assume that this patient would have yielded a reaction with his own cyst fluid before operation. In the second case a cyst in the abdominal wall was aspirated and some of the fluid was injected into the surrounding tissues. The results obtained with the complement fixation test ten days later showed that the fluid possessed antigenic properties. A moderate delayed reaction was observed to a test done on the day after aspiration. Seven months and also five and a half years later a strong delayed reaction was present. Had these two patients been retested about two weeks after operation, they would probably then have shown no delayed response.

The other two patients were retested on several occasions. One (A.B.) a week before operation showed a strong reaction lasting for three days. A normal pulmonary cyst was evacuated and closed without drainage. Progressively less intense responses were observed on the first, fourth, seventh and fourteenth days after operation, the last two being recorded as slight and very slight reactions. By the seventh day the complement fixation test (ordinary technique) which had previously yielded no reaction, gave a strong reaction, the serum fixing 20 to 25 minimum hæmolytic doses of complement in the presence of hydatid antigen. Six months later, the complement fixation test yielded no reaction, while both phases of the intradermal test were strongly positive and cysts in both liver and spleen were treated.

The other patient (J.B., Case II quoted by Dew, Kellaway and Williams[2]) was mentioned above as showing no reaction twenty-three days before operation and a positive response when tested on the day of operation. Several omental cysts were removed whole and two cysts in the liver and one in the peritoneal cavity were evacuated and closed without drainage. On the first, fourth and seventh days after operation progressively less intense reactions were noted, while the complement fixation test (ordinary technique) which had previously yielded no reaction, gave a strong reaction on the seventh day (30 to 35 minimum hæmolytic doses of complement being fixed). On the fourteenth day when 40 to 45 minimum hæmolytic doses of complement were fixed, the delayed reaction was absent. Two months later three cysts in the liver were evacuated.

In some cases, therefore, the usual postoperative disappearance of the delayed reaction may not occur for some days and even up to a fortnight after operation.

Of the fifteen patients in whom the delayed reaction was absent in the period from one to nine days after operation, four are known to have harboured other cysts at the time when the test was done. The presence of further cysts therefore does not delay the postoperative disappearance of this reaction. In the two cases in which the reaction did persist unusually long after operation, numerous residual visceral cysts were, however, present.

From Ten Days After Operation Onwards.

Thirty-one patients were tested from ten days to two months after operation. Fourteen gave reactions, though in several only a slight response was recorded. Some of these showed no response before or at an earlier period after surgical interference. From ten days onwards after operation the delayed reaction may be obtained, though it frequently remains absent for at least two months.

From two months to a year after operation 36 of the 44 tests gave positive results (81·8%). Some of the patients failing to show a delayed response early in this period later gave a reaction.

In the one to ten year period after operation the delayed reaction is absent in an increasing proportion of cases, probably due in many to the cessation of absorption of antigen either because of cure or from degeneration of the parasite. Thus in this period 55 of 83 tests (66·3%) yielded positive

ILLUSTRATIONS TO THE ARTICLE BY DR. K. STUART CROSS.

FIGURE I.

FIGURE II.

FIGURE III.

FIGURE IV.

ILLUSTRATIONS TO THE ARTICLE BY DR. K. STUART CROSS.

FIGURE V.

FIGURE VI.

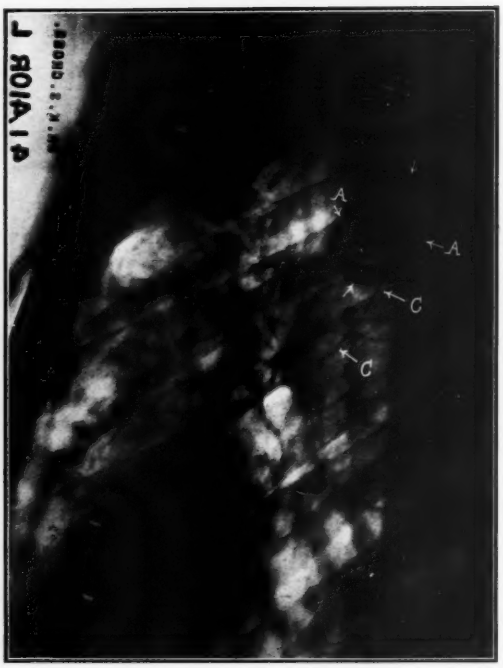

FIGURE VII.

FIGURE VIII.

ILLUSTRATIONS TO THE ARTICLE BY DR. K. STUART CROSS.

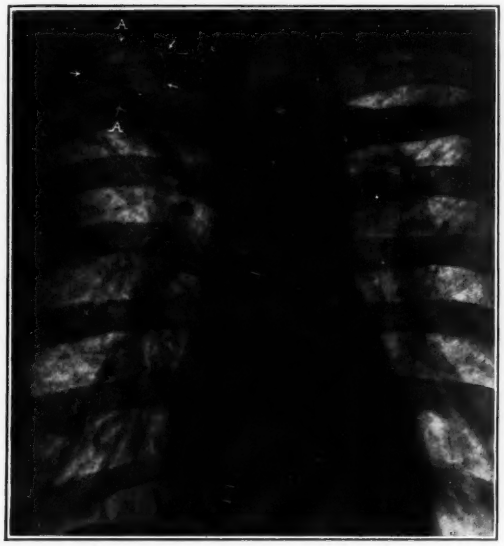

FIGURE IX.

FIGURE X.

FIGURE XI.

FIGURE XII.

ILLUSTRATIONS TO THE ARTICLE BY DR. K. STUART CROSS.

FIGURE XIII.

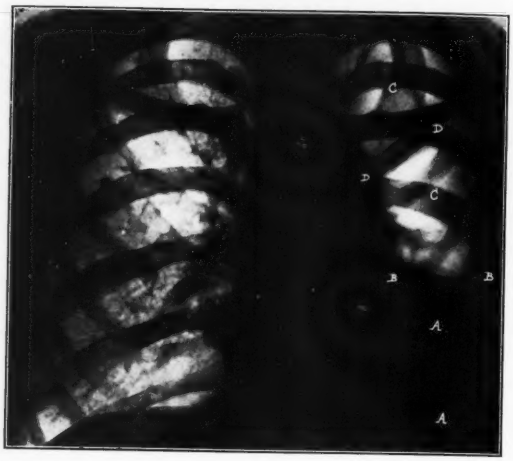

FIGURE XIV.

FIGURE XV.

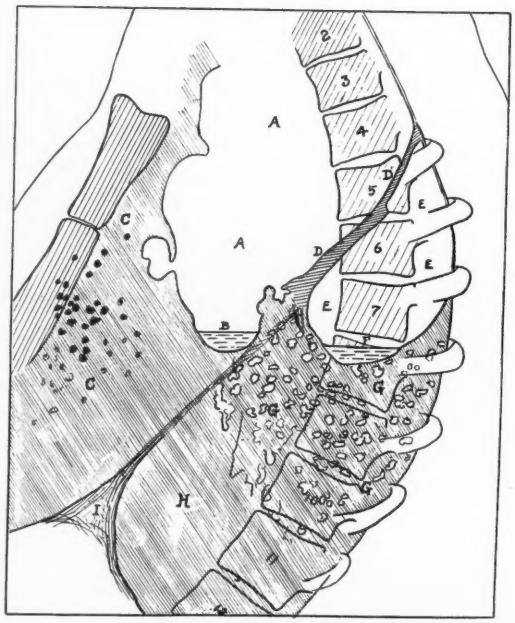

FIGURE XVI.

results. Five of the 28 patients in whom the reaction was absent are known to have had recurrent or residual cysts. Three of these had multiple cysts of bone and muscle.

Table IV shows that six of twelve patients tested more than ten years after operation gave delayed reactions. Four had further cysts treated surgically and all available evidence strongly suggests that the other two also have recurrent or residual cysts. Of the six patients yielding no delayed reactions, three had residual cysts, one calcified, one described as large and non-fluctuant with a firm wall and the other an uncomplicated cyst in muscle. In two no evidence of further cysts can be obtained, while the clinical history of the other makes it improbable that he is cured.

Summary.—A delayed reaction will be found in the first few days after operation in:

1. Patients who have given a preoperative delayed reaction and in whom the surgical interference or the condition of the cyst is such that no absorption of antigen occurs at operation. In these cases the reaction will persist for many months at least.
2. Patients who absorb antigen at operation, may still yield the reaction, if tested within the next few hours. In some the reaction persists for seven to fourteen days afterwards before it temporarily disappears.

The reaction is usually absent from a few hours after an operation at which antigen is absorbed until at least nine days later. It frequently does not reappear for two months or sometimes longer.

From two months to a year or so after operation the majority of patients yields a reaction, though later these become less numerous.

Delayed reactions occurring about ten years or more after operation suggest that a very careful search should be made for recurrent or residual cysts which will be found in most of these cases. The absence of a reaction at this period is not of as much significance. It is therefore only long after operation that the delayed reaction is of value in prognosis.

The Reactions in Conditions Other than Hydatid Disease.

The latency of hydatid disease is well known. Cleland[28] in the analysis of one thousand consecutive autopsies in Adelaide found that unsuspected hydatid cysts were present in 2·3% of bodies. It is therefore only after careful *post mortem* examination that hydatid disease can be excluded in any case with absolute certainty. If, however, all tests for the presence of hydatid disease yield no reaction and operation reveals some other condition to account for the clinical state of the patient or if all available clinical, pathological and radiological evidence points definitely to the presence of some other such condition, it may reasonably be assumed that hydatid disease is not present. The same assumption may be held valid when the diagnosis is made on clinical grounds alone, especially when appropriate treatment results in apparent cure.

Failure to React.

Over the period of five years covered by this analysis 301 patients in whom the diagnosis of hydatid disease might on the above grounds be reasonably excluded, were found to give no immediate reactions with the intradermal test, while 104 similar patients were observed to give no delayed reaction. The small number of observations on the latter response was due to the fact that, following the emphasis placed on the immediate reaction by previous workers, in many cases the delayed phase was unfortunately not observed.

Table V shows the number of these patients falling into the above diagnostic groups.

Table V.
Negative Results in Conditions other than Hydatid Disease.

Diagnosis made by	Immediate Reaction.	Delayed Reaction.
Post mortem examination	49	24
Operation	77	24
Combined clinical, pathological and radiological investigation	137	46
Clinical and therapeutic	38	10
Total	301	104

Many patients in whom the reactions were absent, had to be omitted from this table as the diagnosis was not sufficiently definite to enable hydatid disease to be excluded with certainty.

Among these 301 patients giving no immediate reactions were nineteen definitely suffering from syphilis, eight with proved sarcoma, 56 with other tumours such as epithelioma, endothelioma, angioma, adenoma, chondroma, myxoma, hypernephroma, psammoma, glioma, carcinoma of various parts of the alimentary tract, liver, biliary passages, pancreas, uterus, lung and so forth, 56 with other conditions of the liver and gall bladder and five with septicæmia.

In patients yielding no reaction to this test the presence or absence of jaundice was not always noted. The immediate reaction, however, was absent in 42 jaundiced patients, while the delayed reaction was observed to be absent in 13. The wheal often tends to enlarge in such cases, but in the absence of hydatid disease this increase is not pronounced, so that the wheal is usually less than two centimetres in diameter. If such a result be recorded as failure to react, jaundice will seldom be a troublesome factor in the interpretation of the reaction. As Dew, Kellaway and Williams[2] noted this tendency for the wheal to increase in jaundiced cases at an early stage of their investigations, care was invariably taken in this series to record as no reaction any borderline results in such cases. Failure to react has been recorded in several jaundiced patients with hydatid disease, but no patient giving a definite positive response in the proved absence of hydatid infestation was observed. Therefore, with reasonable care in the interpretation of

results, jaundice is not likely to cause an immediate reaction with this test in the absence of hydatid infestation.

Most pathological conditions which could simulate hydatid disease, were included in this series, though no cases of other helminthic infestation were noted. The 104 patients in whom the delayed reaction was tested, covered practically the same pathological states.

The immediate response to the intradermal test was observed in 398 patients in whom hydatid infestation was suspected, but who had not been subjected to operation for this disease before being investigated. The immediate reaction was absent in 311 of these patients. They include 301 patients (Table V) showing no evidence of hydatid disease and ten (Tables I and II) harbouring echinococcal cysts. The absence of an immediate response correctly indicated that there was no hydatid infestation in 301 of 311 patients (96·8%) and such a result with the intradermal test is extremely valuable, though not absolutely conclusive evidence of the absence of hydatid disease. This is the chief use of the immediate phase of the reaction.

The delayed phase of the reaction was absent in 135 patients (Tables I, II and V) in whom hydatid disease was suspected, though none had been subjected to operation for this condition prior to the investigation. The surgeon later showed that 31 of them (23%) harboured hydatid cysts. The absence of a delayed reaction correctly indicated that there was no echinococcal infestation in only 77% of cases. The evidence provided by the absence of the delayed phase of the reaction to the intradermal test is not sufficiently reliable to allow hydatid disease to be excluded.

Pseudo-positive Results.

It is in the group of patients yielding pseudo-positive results in whom reactions are obtained with the test that final proof of the absence of hydatid disease at *post mortem* is so valuable. Yet even here mistakes may arise, especially with pulmonary cysts which have ruptured previously and at *post mortem* examination perhaps show only a scar to point to the preexisting condition. In several cases in this series the cyst had undergone suppuration either before or after rupture and all hydatid material had disappeared from the abscess cavity found *post mortem*. All such cases have been discarded in this analysis as unproven, though some have shown sufficient evidence of hydatid disease to convince the most critical. One example may be given:

A.L. was admitted on July 16, 1925, with a history of chronic cough and dyspnœa for nine years. Six days before admission a severe paroxysm of coughing was accompanied by pain in the right side of the chest and back. For two days alteration of posture had been followed by cough with expectoration of a great deal of foul sputum. X ray examination revealed an apparently ruptured hydatid cyst with a small fluid level below. The base of the right lung was dull suggesting a possible encysted pleurisy. The physical signs were compatible with this diagnosis. No hydatid elements were found in the sputum. The immediate reaction gave a positive result and the serum fixed 56 minimum hæmolytic doses of complement in the presence of hydatid antigen. The Wassermann test yielded no reaction. A sudden hæmoptysis led to death from asphyxia. *Post mortem* examination revelead a large abscess cavity half-full of blood and pus at the base of the right lung. The pathologist's report was empyema, pulmonary abscess, intrapulmonary hæmorrhage.

Undoubtedly this patient had a ruptured suppurating pulmonary hydatid cyst from which all hydatid material had been expelled.

The Immediate Reaction.

Thirty-five patients gave reactions in the absence of any confirmatory evidence of hydatid disease. Including the 301 definitely non-hydatid patients who failed to react, 336 patients were tested. Cleland,[28] from his figures in 1,000 consecutive *post mortem* examinations, finds the incidence of latent hydatid disease is 2·3%. Only seven cases could thus be accounted for in this series, which, however, comprises rather a selected group of chiefly hospital patients.

Of these 35 patients one should have been rejected because of a reaction with the control injection. This was done in two similar patients suffering from hydatid disease, one of whom showed dermatographia. Seven were recorded as giving slight immediate reactions. Further experience has shown that such slight responses should be regarded as no reaction. Of these seven cases, one at *post mortem* examination showed a scirrhous carcinoma of the right ovary and many similar growths in the cerebellum, probably secondary to a tumour of the breast removed eight years previously. Operation revealed a thyreoglossal cyst in one patient, while in another the appendix was removed. In two the diagnosis was pulmonary tuberculosis, in one gastric ulcer and in another the record is incomplete.

Dew, Kellaway and Williams[2] state that special care is needed to avoid mistaking pseudo-positive results for genuine reactions, particularly in cases of jaundice with pruritus, in those with generalized skin disease and in patients with a tendency to urticaria related to abnormal sensitiveness to foreign protein, while possibly some individuals may be sensitive to sheep serum accidentally present in the testing fluid. To these Kellaway[21] later added cases of dermatographism. Much care was apparently exercised in this series, for no case of a reaction occurred in a jaundiced patient in the absence of hydatid disease. One patient with angioneurotic œdema gave an immediate reaction. Three patients with a history of urticaria yielded immediate reactions, though the delayed response was absent and the complement fixation test gave no reaction. One of them gave a history which suggested that a pulmonary hydatid cyst might have ruptured twenty years previously. One patient on being retested was found sensitive to sheep serum.

Twenty-two patients remain whose reactions are not explicable by any of these causes. This group is so large and important that it was felt necessary to review the cases critically and the results of

these investigations will form the subject of another paper. Only brief reference will therefore be made to them here.

One patient at *post mortem* examination was shown to have died from aortic regurgitation and cardiac failure. There was no evidence of hydatid disease. This case was reported in a previous number of this journal by L. Hurley.[29] On two occasions with the ordinary technique the serum fixed two and a half minimum hæmolytic doses of complement in the presence of hydatid antigen and this was regarded as a positive result, though further experience has amply confirmed the view of N. H. Fairley[30] that the fixation of three minimum hæmolytic doses of complement is the minimum quantity permitting a positive diagnosis. On the second occasion the serum fixed six minimum hæmolytic doses of complement with the ice box technique—a definite positive (P++) result. The intradermal test showed both an immediate and a delayed response. Though the Wassermann test gave no reaction, the ætiological factor may have been syphilis in which case this patient would be classed with the next group of cases.

Syphilis.—Nineteen patients suffering from syphilis are included in the 301 patients previously considered who showed no immediate response to the intradermal test. There were also seven patients showing a positive immediate response in whom the Wassermann test gave a positive result, though the complement fixation test for hydatid disease was invariably recorded as yielding no reaction. Six were in the tertiary stage and one was a congenital syphilitic. *Post mortem* examination in one case revealed a syphilitic aortitis and a fine cirrhosis of the liver. There was no evidence of hydatid disease. On two occasions the immediate result was recorded as positive, while at the second test the delayed response, previously absent, had become present, possibly as a result of local sensitization after the injection of hydatid fluid seven months previously. The serum of this patient gave only a feeble Wassermann reaction (P+), but the other six patients all manifested strong reactions, four on titration to an end point being found to fix from 30 to 45 minimum hæmolytic doses of complement. The other two patients retested 16 and 19 months later showed no immediate reactions with the intradermal test, though the serum of one still fixed at least six minimum hæmolytic doses of complement (P+++) in the Wassermann test. The serum of the other was not retested. None of the four patients whose sera were specially titrated, was available for retesting with the intradermal test. One at operation had a gumma of the kidney, while another had suffered from asthma for years and this may have been a factor influencing the reaction. Hercus[26] has drawn attention to the tendency for pseudo-reactions to occur in asthmatics.

Syphilis apparently does not cause delayed reactions with the intradermal test, for in only one of these patients was a delayed reaction found on the occasion of the second test as explained above. In seven patients with syphilis as well as hydatid disease who were investigated post-operatively (one tested twice), two delayed reactions were observed four and five years after operation, while five of the six failures to react were found within one month of operation and in the other the date of operation is not given. If the fluid used is known to be a suitable antigen, the presence of a delayed reaction with the first intradermal test in a patient with syphilis is evidence of hydatid disease.

Twelve patients in whom an immediate reaction was the only laboratory evidence of echinococcosis, do not fall into any special group. In three with pain in the region of the liver, the clinical data were insufficient for diagnosis, but radiological examination revealed no evidence of hydatid disease. Of two giving well-marked reactions, one was treated for tonsillitis and bronchitis, while the other at operation manifested a retro-peritoneal sarcoma with many secondary growths. One patient with an X ray diagnosis of carcinoma of the œsophagus had an enlarged liver. The first test did not give a very definite response, but eight months later a strong reaction was recorded. In another patient with a mass in the right side (possibly a kidney which had undergone ptosis) the immediate result was recorded as positive, though fifteen days later there was no reaction, while a strong delayed reaction, perhaps due to local sensitization from the previous injection, was observed. The diagnoses in other cases were Still's disease, intermittent hydronephrosis, renal colic, generalized pulmonary tuberculosis and a possible periosteal sarcoma.

It has been seen above that occasionally on retesting a patient previously giving no reaction, a positive response is observed. One patient at operation was found to have a gall bladder filled with calculi, but there was no evidence of hydatid disease. The immediate results of the intradermal test were recorded as no reaction on the first occasion, slightly positive ten days later and strongly positive on the twenty-third day from the first injection. This suggests that the patient was sensitized by the previous injections of hydatid fluid. This matter has been more fully investigated and will be dealt with in a subsequent communication.

One patient who suffered from asthma twenty years previously, had a bilateral laryngeal paralysis and pulmonary fibrosis. On two occasions at six day intervals both phases of the test were recorded as giving a positive result. A year later both immediate and delayed reactions were absent and no evidence of hydatid disease could be found.

Of 62 patients with hydatid disease not previously operated on for the trouble, 52 (Tables I and II) showed immediate reactions. The 35 patients in this series giving pseudo-positive immediate responses have been discussed above. Thus only 52 of 87 patients (59·8%) giving an immediate reaction with this test suffered from hydatid infestation. An immediate response is not conclusive evidence of hydatid disease and no patient should

be subjected to operation for suspected hydatid infestation on this finding alone. It is obvious that the greatest care is necessary in the interpretation of an immediate reaction with this test.

The Delayed Reaction.

The four patients in this series yielding delayed reactions in the absence of hydatid disease have been recorded above. In two *post mortem* examination confirmed the absence of any hydatid cysts.

It is suggested that local sensitization of the subcutaneous tissues from the injection of hydatid fluid on the occasion of the first test was probably responsible for the delayed reaction to the second injection in two of these four patients.

The third patient has been described in the previous section. This patient gave positive results in two tests at an interval of six days, but twelve months later both phases of the reaction were absent.

The remaining patient at *post mortem* examination was shown to have suffered from aortic regurgitation and cardiac failure. As he was not retested, no explanation of the reaction can reasonably be advanced.

Though the delayed reaction is far less sensitive than the immediate response, it is subject to fewer fallacies (four pseudo-positive results in 25 patients showing a delayed reaction). The presence of a delayed reaction is therefore valuable evidence of hydatid infestation, past or present. Occasionally a delayed reaction is found in the absence of an immediate response. For these reasons the delayed phase should invariably be observed in every patient suspected of hydatid disease.

Summary and Conclusions.

1. The results of intradermal tests for hydatid disease are critically analysed.

2. In patients not previously operated on for hydatid disease the immediate response was present in 77% of those harbouring uncomplicated cysts and in 92·6% of those with ruptured or suppurating cysts.

3. Of 87 patients showing an immediate reaction, there was proof of hydatid disease in only 52 (59·8%). A positive immediate response to this test is therefore not conclusive evidence of hydatid disease. Great care in interpretation of the reaction is necessary. No patient should be subjected to operation on this finding alone.

4. No evidence of hydatid infestation was found in 96·8% of patients in whom the immediate response was absent. The absence of an immediate response is therefore extremely valuable, though not conclusive evidence on which to exclude hydatid disease. This is the chief value of the immediate reaction. When there is no history of a recent urticarial rash, the absence of an immediate response definitely excludes a ruptured or suppurating cyst.

5. In this country a positive delayed response to the first intradermal test on any patient is of value as evidence of the presence of hydatid disease, provided that the fluid used for the test is known to be suitable. This response was found only in 56% of patients with uncomplicated cysts and in 26% of those with ruptured or suppurating cysts. The absence of a delayed reaction is of no value in excluding hydatid disease.

6. Absence of a delayed reaction in the presence of a positive immediate response associated with high titre complement fixation or precipitin tests is pathognomonic of rupture or suppuration of a cyst in a patient not previously operated on for hydatid disease. Such findings are also frequent in the second week after operation on an hydatid cyst.

7. The pathological condition of the cyst has a much greater influence on the intradermal reaction than the location of the parasite.

8. In the postoperative period immediate reactions were absent in 9·8% of patients. Absence of an immediate reaction months or years after operation in a patient previously showing a positive response is strong evidence of cure when recent rupture of a cyst can be excluded.

9. A preoperative delayed reaction usually disappears within a few hours to a fortnight after operation. Generally it reappears in from ten days to two months. When no absorption of antigen occurs, the reaction is not affected by the surgical interference.

10. Reactions ten years or more after the previous operation for hydatid disease suggest a careful investigation of the patients for further cysts which will generally be found.

Acknowledgements.

To those practitioners who were so courteous as to supply me with further clinical notes of the patients tested for them at the Institute I desire to express my thanks.

References.

(1) K. D. Fairley: "The Investigation of the Immunity Responses in Hydatid Disease," The Medical Journal of Australia, July 14, 1923, page 37.

(2) H. R. Dew, C. H. Kellaway and F. E. Williams: "The Intradermal Reaction in Hydatid Disease and its Clinical Value," The Medical Journal of Australia, May 9, 1925, page 471.

(3) V. Puntoni: "*Sulla Diagnosi Biologica delle Cisti da Echinococco*," *Bolletino delle Scienze mediche di Bologna*, May 13, 1910, Volume X, page 123 and page 245, quoted by Magath.(17)

(4) L. Boidin and G. Laroche: "*La Toxicité Hydatique, Toxicité Directe et Anaphylaxie*," *La Presse Médicale*, May 4, 1910, page 329.

(5) T. Casoni: "*La Diagnosi Biologica dell'Echinococcosi Umana Mediante l'Intradermoreazione*," *Folia Clinica Chimica et Microscopica*, 1911-12, Volume IV, page 5.

(6) A. Testi and C. Zoli: "*Dell'Intradermoreazione Echinococcica*," *Rivista Critica di Clinica Medica*, December 20, 1919, page 601.

(7) A. Gasbarrini: "*Sul Valore dell'Intradermoreazione nell'Echinococcosi Umana*," *Il Policlinico Sezione Medica*, December 19, 1919, page 441.

(8) P. Luridiana: "*Valore Clinico dell'Intradermoreazione del Casoni per la Diagnosi di Echinococcosi*," *Il Policlinico Sezione Practica*, May 3, 1920, page 499; "*Valore Comparativo dell'Intradermoreazione con altri Metodi Biologici Usati per la Diagnosi di Echinococcosi*," *Il Policlinico Sezione Pratica*, January 10, 1921, page 41.

(9) F. Pontano: "*Intradermo- e Sottocutaneoreazione con Liquido Cistico nelle Echinococcosi Umane*," *Il Policlinico Sezione Medica*, November 8, 1920, page 405.

(10) G. Serra: "*L'Intradermoreazione nella Diagnosi dell' Echinococcosi*," *Il Policlinico Sezione Chirurgica*, January 15, 1921, page 35.

(11) J. H. Botterl: "*Über Echinokokken-Anaphylaxie*," *Zeitschrift für die Gesante Experimentelle Medizin*, 1922, *Band* XXX, *Seite* 199.

(12) O. Cignozzi: "*L'Echinococco Epatico. Contributo Clinico, Semeiotico e Tecnio Operativo*," *Riforma Medica*, May 22, 1922, page 485.

(13) C. Manassei: "*Sul Comportamento della Formula Leucocitaria in Rapporto alla Intradermoreazione del Casoni ed alla Sotto Cutaneoreazione del Pontano, nei Portatori di Cisti da Echinococco*," *Riforma Medica*, April 16, 1923, page 361.

(14) J. Bacigalupo and A. J. Grosso: "*Anaphylaxie Hydatique*," *Comptes Rendus de la Société de Biologie*, February 10, 1923, page 347.

(15) A. Giampaolo: "*Dell'Intradermoreazione quale mezzo Diagnostico nell'Echinococcosi Umana*," *Riforma Medica*, October 15, 1923, page 985.

(16) G. Deusch: *Zur spezifischen Diagnostik der Menschlichen Echinokokken-Erkrankungen insbesondere Mittels der Intrakutanreaktion*," *Deutsche Medizinische Wochenschrift*, August 7, 1925, page 1319.

(17) T. B. Magath: "Echinococcus Disease, Etiology and Laboratory Aids to Diagnosis," *The Medical Clinics of North America*, September, 1921, page 549.

(18) F. Ithurrat and B. N. Calcagno: "*Reactiones Biologicas de las Hidatidosis*," *Semana Médica*, October 26, 1922, page 864; "*Étude de la Valeur Comparée des Différentes Réactions Biologiques dans le Diagnostic de l'Echinococcose*," *La Presse Médicale*, September 5, 1923, page 765.

(19) E. Trenti: "*L'Metodi Biologici nelle Diagnosi dell' Echinococcosi Umana, L'Intradermoreazione Precose*," *Il Policlinico Sezione Medica*, July 1, 1924, page 353.

(20) H. R. Dew and F. E. Williams: "Diagnostic Methods in Hydatid Disease," THE MEDICAL JOURNAL OF AUSTRALIA, Supplement, March 15, 1924, page 113.

(21) C. H. Kellaway: "Diagnostic Tests in Hydatid Disease," "Transactions of the Australasian Medical Congress (British Medical Association), Second Session," Supplement to THE MEDICAL JOURNAL OF AUSTRALIA, November 19, 1927, page 388.

(22) L. Prado: "Biologic Tests of Echinococcus Disease," *Archiv. de la Clinica Medica*, December, 1925, page 49 (Abstracted in *The Journal of the American Medical Association*, February 19, 1927, page 612).

(23) G. Lemaire and J. Thiodet: "*Résultats comparés des différentes Méthodes Biologiques de Diagnostic des Kystes Hydatiques, Réaction de Casoni*," *Archives de L'Institut Pasteur D'Algerie*, March, 1926, page 71; "*Sur la Nature du Poison Hydatique*," *Comptes Rendus de la Société de Biologie*, June 25, 1926, page 166.

(24) H. G. Mogena: "*La Intradermoreaction Hidatica*," *Archivos de Medicina cirugia y. especialidades*, April 17, 1926.

(25) C. Gernez: "Intradermal Test in Diagnosis of Echinococcosis," *Echo Médical du Nord*, June 26, 1926, page 370 (Abstracted in *The Journal of the American Medical Association*, August 28, 1926, page 709).

(26) C. E. Hercus: "Laboratory Aids in the Diagnosis of Hydatid Disease," *New Zealand Medical Journal*, December, 1926, page 323.

(27) E. Burnet, L. Caillon and G. Brun: "*Sur les Méthodes Biologiques du Diagnostic du Kyste Hydatique*," *Archives de L'Institut Pasteur de Tunis*, September, 1927, page 291.

(28) J. B. Cleland: "The Pathological Lesions Present in One Thousand Consecutive Autopsies in the Adelaide Hospital," THE MEDICAL JOURNAL OF AUSTRALIA, May 21, 1927, page 737.

(29) L. E. Hurley: "Sacculated Effusion Simulating Hydatid," THE MEDICAL JOURNAL OF AUSTRALIA, November 13, 1926, page 676.

(30) N. H. Fairley: "Researches on the Complement Fixation Reaction in Hydatid Disease," *The Quarterly Journal of Medicine*, April, 1922, page 244.

THE RADIOLOGICAL EXAMINATION OF THE THORAX.[1]

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IT has for some time been considered, one might almost say universally, that the correct procedure in the radiological investigation of the lungs is an initial fluoroscopic examination, followed by the taking of a stereoscopic pair of postero-anterior films. With this the present writer has never found himself in agreement.

Postero-anterior stereoscopy certainly gives an excellent three-dimensional impression of the costal cage and also of the linear broncho-vascular markings of the normal lungs. But as soon as one comes to examine fairly gross pathological changes, more or less amorphous, with no defined internal structure, one finds that these do not fuse at all well and that they are difficult to locate in antero-posterior depth. Further, one cannot define the interlobar planes other than that between the right upper and middle lobes and so cannot localize such a lesion definitely in any one particular lobe. The postero-anterior view also fails in several other respects, as will be seen later.

One is driven to a consideration of the fundamental principles of radiography to see whether the problem cannot be attacked from another angle.

There are two basic methods of examination that have obtained since the earliest days of radiography: (i) stereoscopy and (ii) the taking of skiagrams in two planes at right angles to one another; and it is in the application of the second of these methods that there is to be found the solution of many of the difficulties and fallacies inherent in the generally accepted routine.

For some years mention of the value of lateral views of the thorax has occurred sporadically in the literature, but the possibilities of this technique had not been fully investigated and the procedure had certainly not been generally adopted.

W. A. Evans[1] mentioned it in a paper published in 1921, Le Wald and Green[2] in 1924 and J. S. Pritchard[3] in 1925. A fairly full description of the lateral view of the normal chest was also contained in the Report of the Committee of the National Tuberculosis Association on the "Clinical and Roentgen-Ray Findings in the Healthy Adult Chest"[4] published last year.

The present writer, however, has been taking lateral films in conjunction with the standard postero-anterior view in selected cases for many years and with increasing frequency as their value became more and more apparent. More recently they have been adopted by him as an integral and essential part of the routine examination of all patients with chest affections.

Since the work was started on this paper there have appeared almost simultaneously in the Ameri-

[1] Read at a meeting of the Victorian Branch of the British Medical Association on July 4, 1928.

can journals two articles[5] [6] dealing with the value of the lateral exposure in the diagnosis of pathological conditions in the lungs. Though anticipating its publication, they are welcome as furnishing an interesting and satisfactory corroboration of the position taken up by the present writer.

Brown and Weiss,[5] in one of these papers, state that:

The lateral view of the thorax is but seldom used among roentgenologists in the study of the thoracic contents. This, we believe, is due to the assumption that stereoscopy of the usual antero-posterior views of the thorax is sufficient to enable one to recognize any existing change in the lungs, pleuræ or mediastinum. This assumption may be true in theory, but on practical application we find that the usual stereoscopic views of the thorax do not always reveal every change in the lungs, pleuræ or mediastinum and when revealed, the exact location and nature cannot always be determined with a high degree of accuracy.

J. F. Chapman,[6] in the second of the articles referred to, also says:

But few writers have recognized the importance of the lateral view in chest radiography, judging from the scarcity of reports upon the subject.

He believes that "very few radiologists take routine lateral exposures." He explains that:

At the Department of Radiology of the Stanford Medical School, under the direction of Dr. W. E. Chamberlain and Dr. R. R. Newell,[1] all Roentgen-ray examinations of the chest include first a fluoroscopic examination, followed by a single film in the anterior position and one in the direct lateral position. Stereoscopic films in the anterior position are not taken routinely. The fluoroscopic examination determines whether the lateral film is to be taken in the right or left lateral position. Routinely the right lateral position is taken, but if the fluoroscopic examination has shown that the lesion is on the left side directions for the taking of a left lateral film are given to the technician. This procedure has been carried out for a period of several years and all of us who have worked in the Department, have come to rely upon the lateral exposure more and more as our own experience with it has grown. The procedure was instituted because stereoscopic films give little more information than one flat film. Soft tissue densities do not stereo well, especially if large and intense.

Dr. H. K. Pancoast in the discussion on Brown and Weiss's paper,[5] and referring to the report of the Normal Chest Committee, of which he was a member, stated:

Since this study was completed and after having such experiences as the authors have had, I have insisted that the lateral roentgenogram be a routine procedure in practically every chest examination. One never knows what may be revealed in a lateral view.

Finally one would quote from Wessler and Jaches's textbook on "Clinical Roentgenology of Diseases of the Chest,"[7] published in 1923. After discussing the value of stereoscopy the authors go on to say:

There is, however, a tendency among Roentgenologists to exaggerate its importance, to consider it indispensable for the diagnosis of pulmonary tuberculosis and finally to regard a single plate as of minor value. Such a view we wish to controvert as emphatically as we can because it is contrary to fact. True, to those who have not mastered the art of making excellent single plates, the striking plasticity and apparent detail of even a mediocre stereoscopic set will be pleasing to the eye. Yet, if the truth were told, in many of these cases the Roentgenologist has achieved nothing more than a pleasing optical illusion. The test of a good Roentgen examination is the single plate. If it is properly made, so that the markings are sharply defined and free from haziness and distortion, the examiner will have no difficulty in distinguishing the infiltrations of tuberculosis. On the other hand, if a proper technique is not observed, stereoscopy will avail as little as a single plate.

This statement is of special interest in that the authors were apparently quite unaware of the possibilities inherent in the lateral film and were not putting it forward in support of any alternative technique. In fact, though their book contains reproductions of no less than four hundred and thirty skiagrams, there is amongst all this number not a single lateral view!

Illustrations of a few typical examples of the value of the method advocated are appended, together with brief notes, though the limitations of space do not permit of anything like a full exposition of the possibilities.

FIGURE I.—Typical lateral view of right lung. Interlobar pleural planes clearly seen in original film—A-A between upper and middle lobes, B-B between upper and lower, C-C between middle and lower. The last is somewhat thickened in its lowermost part and can be traced below the level of the dome of the diaphragm towards the lateral costo-phrenic sulcus. There was a history of right-sided basal pleurisy.

Note how the lowermost part of the middle lobe rests on the diaphragm; the relatively shallow right anterior sulcus D; the deep right posterior sulcus E; the amount of lung posteriorly below the line F-F that escapes observation in the standard postero-anterior views, F-F being drawn from the tube tangential to the dome of the diaphragm. Encapsuled empyemata and bronchiectatic conditions in this region are especially liable to be missed with the ordinary technique.

FIGURE II.—Primary carcinoma of right upper lobe. The spreading fan-like pattern D-D of the infiltration is well shown. Note how the interlobar tissue A-A between the upper and middle lobes is involved and greatly thickened. The adjacent portion of the plane B-B between the upper and lower lobe is slightly thickened, whilst that C-C between the middle and lower is approximately normal. The last is quite well defined, although the patient failed to hold his breath, as shown by the movement of the right hemidiaphragm. Ultimately the whole right lung was involved, with death of the patient.

FIGURE III.—Standard postero-anterior film showing a pathological density A-A, apparently extending from the left hilum to axillary wall.

FIGURE IV.—Lateral view of the left lung of same patient as Figure III. It shows A-A to be an infiltration confined to the apex of the left lower lobe, presumably tuberculous, and separated from hilum by extent of normal lung tissue. Tubercle bacilli were recovered from the sputum. It demonstrates value of lateral view in localizing such a diffuse lesion.

FIGURE V.—Lateral view showing thickening A-A of the left interlobar pleura from apex to diaphragm. The patient's history suggested left-sided pleurisy seven and two months respectively prior to X ray eaxmination. This is a pathological condition quite undemonstrable by the ordinary technique. Note the tuberculous infiltration B-B of the apex of the left upper lobe, strictly limited posteriorly by the interlobar plane. There is retraction of the involved lung, with compensatory dilatation of the healthy apex of the left lower lobe, which is

[1] W. Edward Chamberlain, M.D., Associate Professor of Medicine (Radiology), Stanford Medical School; R. R. Newell, M.D., Assistant Professor of Medicine (Radiology), Stanford Medical School.

seen extending up to the point C level with the second thoracic vertebra (D-D indicates dorsal surface of lower lobe).

FIGURE VI.—Tuberculous lesions in the left lung field, extending down to the level of the dome of the diaphragm, but with practically none above the level of the clavicle. There is a large cavity A near the lateral wall just below the clavicle, with a typical thickened draining bronchus B-B leading to the hilum. It is interesting to note that this lesion could not be detected by physical examination.

FIGURE VII.—Lateral view of the chest of the same patient as Figure VI, showing that in spite of the distribution of the lesions, the upper lobe only is involved. Note the discrete, flocculent lesions extending forwards to the anterior thoracic wall and downwards to the diaphragm; the cavity A with its thick wall and circular cross-section, lying just in front of and tangential to the interlobar plane C-C and the entire absence of pathological shadows immediately on crossing the line C-C into the lower lobe. It would be impossible with the ordinary technique to localize the lesion in this way. Where, as in this case, there are pathological changes close to an interlobar plane, the latter is generally involved and therefore fortunately shows up even more clearly than usual, so that lobar localization can be determined with great ease.

FIGURE VIII.—Same view as in Figure VII four and a half months later. There has been much resorption of the pulmonary exudate around the discrete foci of infection throughout the left upper lobe. The wall of the cavity A has similarly become thinner and flexible with partial collapse antero-posteriorly. This could be seen only in the lateral view. Incidentally it shows how advisable it is to re-examine these patients to determine the trend of the pathological changes.

FIGURE IX.—Fibro-caseous changes in the apices of both upper lobes. There is a large cavity A-A at the right apex above the level of the clavicle. The patient is apparently well, but his sputum is swarming with tubercle bacilli.

FIGURE X.—Lateral view of the chest of the same patient as Figure IX, giving a side view of cavity A, showing that the latter is situated centrally in the apex. This disposes of the contention that the lateral view cannot be applied satisfactorily to apical lesions. The upper border of this cavity is only two centimetres (three-quarters of an inch) from the extreme apex of the right lung. The presence of cavitation was not detected by physical examination prior to radiography. (B-B = fibro-caseous changes; C-C = interlobar septum.)

FIGURE XI.—A large hydatid cyst A-A in the right lung, discovered in the routine survey of the chest prior to gastro-intestinal examination. It ruptured ten months later.

FIGURE XII.—From the same patient as Figure XI. The lateral view of the right lung completes localization of the hydatid cyst A-A. (B-B = interlobar septum; C-C = the posterior surface of the lung.)

FIGURE XIII.—Large pyriform mass A-A of tracheo-bronchial ("bifurcation") lymphatic glands. These were quite invisible in the standard postero-anterior film, being hidden between the ascending aorta and the spinal column. The latter film, in fact, gave a lung picture well within the normal limits of the healthy adult chest, failing to reveal the cause of the chronic irritable cough, which the patient (a woman of 25 or 30 years) stated she could remember having had from earliest childhood. (T-T = trachea.)

FIGURE XIV.—Standard postero-anterior film showing a gross pathological condition of the left lung. All that can be seen in this view is an apparently gross basal density A-A, extending from the diaphragm to the level B-B, above which is air C-C (? pneumothorax), crossed by bands of tissue D-D.

FIGURE XV.—Lateral view of the left lung of same patient as Figure XIV. This shows in full detail: (*a*) Excavation of the postero-superior half of the left upper lobe, not reaching to the anterior thoracic wall; (*b*) a shallow pool of muco-pus at the bottom of this cavity; (*c*) nodular parenchymatous tuberculous lesions in the air-containing tissue of the remainder of the upper lobe, extending right down to the diaphragm; (*d*) gross thickening of the left interlobar pleura in the upper half, occupying its normal position; (*e*) cavitation of the apex of the left lower lobe; (*f*) a pool of muco-pus at the bottom of cavity; (*g*) below this a broad zone of caseation; (*h*) air-containing lung from this zone down to the diaphragm; (*i*) tenting of the diaphragmatic pleura at the junction with the interlobar, due to gross inflammatory thickening of these structures and retraction of lobes.

Note that not only is all this detail invisible in the standard postero-anterior films, but most of what can be seen in the latter is misleading. The basal density, for instance, is due to the heart being dragged across into contact with the left axillary wall. On account of the mass of detail in this film an explanatory diagram (Figure XVI) has been attached. The lateral view of the right lung of this patient gave quite a different picture, showing discrete, nodular, tuberculous lesions scattered throughout the right upper lobe.

Conclusions.

The lateral view is essential in the radiological examination of the thorax.

Practically the whole lung from apex to base can be included in the lateral view.

The right and left lateral views of the same patient give quite different pictures, the shadows of the distant lung being so diffused as not to obscure or interfere appreciably with those of the lung nearer the film.

Gross lesions in the far lung may occasionally show up, but their relative lack of sharpness, along with reference to the anterior view, is usually sufficient to prevent any errors in interpretation.

In the majority of pathological lesions of the lung stereoscopic postero-anterior films are of little more value than a single film. Without corresponding lateral views they may be quite misleading; with lateral views stereoscopy is usually unnecessary.

Lateral films will localize with accuracy and furnish considerable further information in regard to many pathological conditions demonstrable in the standard postero-anterior films.

They will further reveal much that is either invisible or easily missed in the latter, among which are included: (i) the interlobar planes, (ii) thickening of these and interlobar collections of pathological material, (iii) diaphragmatic pleurisy associated with interlobar, (iv) lesions below the level of the domes of the diaphragm, (v) lesions hidden in postero-anterior films by the cardiac shadow, (vi) pathological conditions in the posterior mediastinum, (vii) lesions, mainly tuberculous, in the apices of the lower lobes, obscured in the postero-anterior films by similar lesions in the upper lobes, (viii) the thoracic spine.

In many cases, especially of pulmonary tuberculosis, repeated examinations are of the utmost value in both diagnosis and prognosis.

References.

(1) W. A. Evans: "The Value of Lateral and Oblique Roentgen-Ray Studies of the Chest," *American Journal of Roentgenology*, March, 1921, page 106.

(20) L. T. Le Wald and N. W. Green: "The Value of the Lateral Projection in the Roentgen-Ray Examination of the Chest, with Special Reference to the Surgical Treatment of Abscess of the Lung," *Archives of Surgery*, January, 1924, page 265.
(21) J. S. Pritchard: "The Value of Lateral and Oblique Roentgen-Light Exposure in the Diagnosis of Thoracic Affections," *Archives of Surgery*, January, 1925, page 557.
(22) "Clinical and Roentgen-Ray Findings in the Healthy Adult Chest: Report of Committee of the National Tuberculosis Association," *American Review of Tuberculosis*, April, 1927, reprinted in the *American Journal of Roentgenology*, May, 1927, page 507.
(23) S. Brown and H. B. Weiss: "The Value of Lateral Views of the Thorax," *The Journal of the American Medical Association*, January 21, 1928, page 187.
(24) J. F. Chapman: "The Value of the Lateral Exposure in the Roentgen Examination of the Chest," *Radiology*, February, 1928, page 139.
(25) H. Wessler and L. Jaches: "Clinical Roentgenology of Diseases of the Chest," 1923, page 56.

Reports of Cases.

MALIGNANT ENDOCARDITIS.

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and
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Case History.

(W. Gerald Holt.)

In December, 1927, a male patient, K.D., *ætatis* twenty-nine years, was admitted under the care of Dr. F. Guy Griffiths with a provisional diagnosis of enteric fever. He complained of lassitude and headache for two weeks with concurrent mild diarrhœa. The patient felt hot, but did not perspire much. His temperature was 38·8° C. (102° F.).

On examination rose spots were present over the abdomen, fading on pressure. The tongue was heavily furred and slightly moist. The apex beat was in the fifth left interspace just outside the mid-clavicular line. Cardiac dulness generally was slightly increased. A blowing systolic murmur was audible over the whole præcordium, it was conducted into the axilla. The pulmonary second sound was accentuated. The pulse was regular in rate and rhythm, but bounding in character. No capillary pulsation was present. The other systems were clear.

During the first month the temperature was raised only at night, more rose spots appeared in successive crops over the abdomen, fading on pressure. Mild constipation alternated with diarrhœa. Mentality was slightly deranged, but this change was only transitory. The patient on close questioning now admitted that he had suffered from a "leaking heart valve" for some years. A rheumatic history was denied, no evidence of septic foci was found in ear, nose or throat regions. The Wassermann, Kahn and Widal tests yielded no reaction and urological and blood examinations revealed no abnormality.

A blood culture shortly afterwards showed the presence of *Streptococcus viridans*, the leucocyte count then being over 11,000 per cubic millimetre, but the proportions of leucocytes were normal.

In the second month streptococci were again isolated from the blood stream, the leucocytes were now nearly 12,000. The red cells had decreased from 5,000,000 to 3,150,000, slight irregularity in size, shape and staining being present. Temperature, as before, varied from 38·8° C. (102° F.) to normal, nocturnal elevations being the rule.

Signs of mitral stenosis and aortic regurgitation were now more pronounced, enlargement of the heart, a presystolic thrill and "to-and-fro" murmurs being detected.

The third month was characterized by more marked changes in the cardiac region, the presystolic thrill and murmur being very evident and the "sawing" murmur at the aortic region being more pronounced. Cardiac enlargement was further augmented. Polyvalent serum injections were without definite clinical benefit. Rose spots occasionally occurred over the abdomen. The patient felt well except for slight abdominal and præcordial pains.

The liver was now considerably enlarged, tenderness over the spleen was present. Dulness at the lung bases was noted. Nocturnal pyrexia was present.

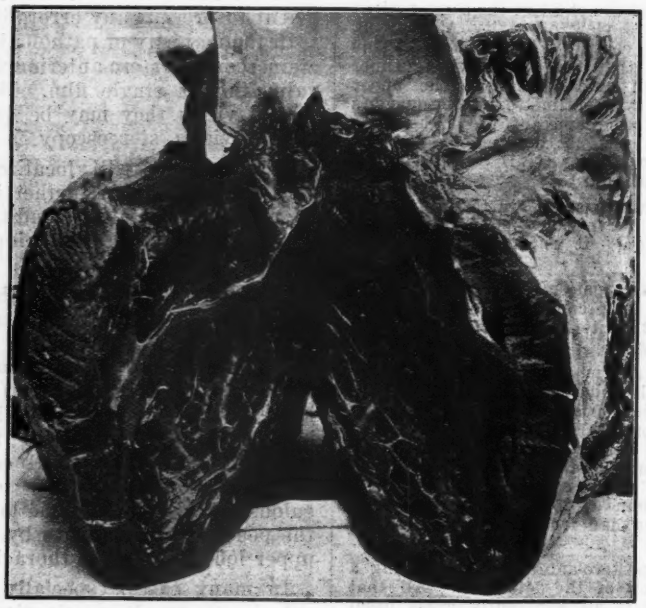
Throughout the fourth month the patient's condition became progressively worse. Rhonchi over both sides of the chest were evident, copious sputum was expectorated; no tubercle bacilli were found.

Pallor of the face was apparent. This was checked by a blood transfusion which benefited the patient slightly.

Epithelial casts and a few red blood cells were present in the urine. Erlich's diazo test yielded a reaction.

Ascites became progressively pronounced and œdema of the face and extremities was well marked. Dyspnœa developed shortly before death, the fluid at the lung bases having increased considerably. The patient became cyanosed and died at about the end of the fourth month. The pulse rate was rapid—up to 120 per minute—unless controlled by digitalis administration.

Treatment consisted of antistreptococcal and polyvalent serum injections, digitalis, iron tonics, antipyretics, suitable diets and symptomatic treatment in general.



Post Mortem Findings.

The body was emaciated, extreme pallor and some œdema of the face and extremities were present. The lungs manifested acute œdema, but were otherwise normal. The pericardium was inflamed and pericardial effusion was copious and straw coloured. The heart was dilated, the muscle pale and flabby, and the right atrium contained *ante mortem* clot. The aortic valve showed evidences of acute malignant endocarditis with necrosis of the valve segments and large vegetations partly obliterating the opening. The mitral valve showed a patch of

ulceration on one of its cusps and a smaller vegetation. No abnormality of pulmonary or tricuspid valves was discovered. Early atheroma of the aorta was present.

In the abdomen ascites was present. The liver was large and was affected by chronic venous congestion. The spleen was acutely congested and two infarcts were present; one recent, one old in character. Both kidneys showed acute nephritis with some petechial hæmorrhages.

Microscopical examinations confirmed the above observations.

Comment.

(F. Guy Griffiths.)

Here we have a good illustration of difficulty in diagnosis. The condition looked at first like a typical case of typhoid fever, especially as the abdominal rose spots recurred in crops.

During my absence on annual leave for a month Dr. C. W. Sinclair attended the patient. The failure of the Widal test and of blood cultures for typhoid bacilli roused his suspicions. The initial failure to isolate the streptococcus and the low grade of leucocytosis made miliary tuberculosis likely. Even later the absence of further eruption and the presence of the diazo reaction did not favour septic endocarditis.

Acknowledgement.

I have to thank Dr. W. W. Ingram for valuable clinical help and for the preparation of extraordinarily beautiful specimens obtained at *post mortem* examination. They were exhibited at a clinical meeting of the New South Wales Branch of the British Medical Association.

CEREBRAL HÆMORRHAGE IN A CHILD.

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As cases of cerebral hæmorrhage in children under twelve years of age are infrequent, the following case record may prove of interest. On September 21, 1928, a well nourished girl aged ten years was admitted to the hospital in an unconscious condition. Her face was cyanosed and her breathing embarrassed. Every few minutes she was seized with a convulsion during which the upper extremities twitched wildly and the breathing almost stopped. Her lower extremities were rigid during the convulsions. In between each convulsion she lay quietly and her colour improved; her right pupil was widely dilated and fixed and the left pupil appeared normal by comparison. Her pulse rate was 140 and her heart action was violent and characterized by a strong apical thrill. There were well marked rough, presystolic and systolic murmurs and a murmur could be heard transmitted to the axilla. Each convulsion became worse than the previous one and the patient died twenty minutes after admission. Her mother stated that the child had been quite well up till two hours prior to her admission when she had suddenly complained that her head was sore and that she felt something snap in the brain. She had then become blue and fallen unconscious and despite the efforts of an attending medical man had not shown any signs of regaining consciousness.

Post Mortem Examination.

Cranium.

There was considerable congestion of the *dura mater* and of the brain surface. On section of the brain the right ventricle was found to be filled with an extensive hæmorrhage and was surrounded with an area of cerebral softening which obscured and enlarged the outline of the ventricle and extended laterally to within 2·5 centimetres (one inch) of the brain surface.

Heart.

The heart was slightly enlarged and the mitral valve was deformed and thickened with large loosely attached vegetations present.

Thorax.

Both lungs were crepitant; no adhesions were present and there was some early congestion towards both bases. The liver was considerably enlarged and the spleen was slightly enlarged. A section from the latter organ revealed a "sago spleen" type of amyloid infiltration. No abnormality of the alimentary tract was found and the kidneys were lobulated, but otherwise apparently normal.

The cause of death was ventricular hæmorrhage and cerebral softening (probably embolic).

From the *post mortem* findings it would seem that the train of events was firstly an endocarditis affecting the mitral valve of the heart, followed by an infected embolus lodging in the middle cerebral artery, thus leading to cerebral softening and the ventricular hæmorrhage which caused death.

Comment.

In an analysis of 1,015 consecutive autopsies at the Hospital for Sick Children, Great Ormond Street, Sheldon[1] found exactly fifty cases of intracranial hæmorrhage in children under twelve years of age, thus showing that the condition is relatively uncommon. Of these fifty only eight were due to a preexisting malignant endocarditis and in each of the eight patients the site of the hæmorrhage was in the cerebral hemispheres. The remaining cases in Sheldon's series, excluding pre-natal and congenital causes, were shown to be associated with (i) chronic nephritis, (ii) anæmias and other diseases of the blood, (iii) acute fevers, (iv) cerebral thrombosis arising from tuberculosis and other chronic wasting diseases, (v) trauma. Miller[2] recorded an interesting case of a girl aged twelve who died suddenly seven weeks after being struck on the left side of the head by a stone; an extensive subdural hæmorrhage was found over the vertex of both hemispheres at necropsy.

I am indebted to Dr. Edgar H. M. Stephen, Honorary Physician to the Royal Alexandra Hospital for Children, who, through the courtesy of Dr. R. H. Todd, has forwarded a report of a case in which the salient features were similar to those outlined above. Dr. Stephen's patient was a girl of six years and had had an attack of acute rheumatism with endocarditis three or four weeks before admission to hospital. Dr. Stephen considers that the condition is a rare complication of acute rheumatism in children. In this case a definite history of a previous attack of rheumatic fever was unobtainable.

References.

[1] W. P. H. Sheldon: "Intracranial Hæmorrhage in Infancy and Childhood," *The Quarterly Journal of Medicine*, 1926-1927, Volume XX, page 353.

[2] A. H. Miller: *The Lancet*, 1909, page 1339.

EXCISION OF DIVERTICULUM OF THE URINARY BLADDER.[1]

By R. C. Brown, M.B. (Melbourne), F.R.C.S. (England), F.C.S.A.,
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R.F., a male patient, aged fifteen years, was admitted to hospital on July 18, 1928, with a history that two years previously he had begun to pass "white stuff in the urine." This had continued for six months and then blood appeared occasionally in the urine. He said that latterly the blood had been present in every specimen. At this time he was passing urine four times during the day and twice at night. He had some pain in the right loin, but otherwise felt well.

On examination the patient was found to be languid and of a pale, sallow complexion. Some tenderness was present in the right renal angle. Cystoscopy revealed a

[1] The patient described herein was shown at a meeting of the Victorian Branch of the British Medical Association on September 19, 1928.

vesical mucous membrane which was engorged, bled easily and œdematous with scattered areas of projecting cyst-like bodies. The ureteric orifices were not seen. In the site of the right orifice there was a round aperture with a diameter equal to that of a finger; the catheter was passed into this. X ray examination then showed that the catheter was coiled up in a diverticulum. A cystogram was taken and it was found that the diverticulum was situated at the right side of the base of the bladder. Microscopical examination of the urine revealed the presence of erythrocytes, non-motile organisms and triple phosphate crystals.

Operation was performed on August 7, 1928, under spinal anæsthesia. A free incision was made in the middle line and the peritoneum was stripped backwards to the line of the ureters. A ten centimetre (four inch) incision was made in the bladder wall and two fingers were introduced into the diverticulum which was thus raised, and the surrounding tissues peeled off. The ureter and *vas deferens* were densely adherent, the former being coiled round the lateral side of the sac to open on its medial surface about eighteen millimetres (three-quarters of an inch) from the bladder opening. The dissection was difficult and the ureter considerably traumatized; it was then divided above the injured part. The diverticulum was excised through the normal bladder wall which was carefully sutured in two layers with the mucous membrane inverted. The ureter stump was reinserted into the bladder higher up. One tube was left in the bladder, one tube outside the bladder down to the operation area and a catheter was left in the urethra. The extravesical tube was removed on the third day, the intravesical tube on the fourth day and the catheter on the seventh day. No extravesical leakage of urine occurred. The patient was out of bed on the twentieth day and already (September 19, 1928) appears much improved in health. On cystoscopic examination the artificial ureteral orifice has the appearance of a normal one, though it differs in its unusual situation and in the longer intervals between the squirts of urine into the bladder.

I intend to take a pyelogram of the right kidney in three months' time in order to ascertain whether there is any tendency to hydronephrosis.

Comment.

Diverticula occur only in males. They may be congenital or acquired, the latter and sometimes the former resulting from obstructed urination. The muscle layer is sometimes deficient, though Young says there is always some muscle present. They may be multiple, but always one is comparatively large. They are most commonly situated near the base of the bladder near a ureteric meatus which may lie on the wall or margin of the mouth of the diverticulum. Owing to deficient emptying the contents may be infected and muco-purulent or calculous originating an ascending pyelonephritis. It should be borne in mind that the orifice may be small and difficult to find and its size bears no relation to that of the sac. A diverticulum should be suspected in a patient with chronic cystitis not relieved by irrigation and without apparent cause. It should be looked for carefully with the aid of the cystoscope, opaque ureteric catheter and cystography. Sometimes the opaque solution does not easily reveal the entrance to the sac. These patients may long be treated for intractable cystitis.

In a patient after prostatectomy the maintenance of signs of residual and infected urine is likely to be due to undiscovered diverticulum. Therefore, the bladder walls should be carefully inspected during the operation, especially when infection is present. The diverticulum should be excised at the same time, but this may be done as a second stage if thought wiser. If at any time during the course of a prostatectomy the urine is offensive, the surgeon should fear a diverticulum (Pauchet).

In regard to treatment, excision seems the most reasonable treatment. The abdominal incision should be free. In one operation I saw Thompson Walker extend it to well above the umbilicus and then bisect the right rectus. Unhampered approach to the diverticulum should be the guide to the size and direction of the bladder incision. In one method (Marion) it is continued to and round the orifice and later sutured except for the drain opening. The method of invagination into the bladder seems dangerous in all but the simplest cases. Young's method may be advantageous in some conditions. Here the bladder mucous membrane is incised round the orifice. Its edges are raised, seized in forceps and drawn into the bladder while the mucous membrane is progressively separated from the musculo-fibrous coat, as is sometimes done in operating on the appendix and gall bladder. A tube is left in the bared cavity which is shut off from the bladder contents by a purse string suture round the tube at the margin of the opening. Another tube drains the bladder. I would leave in a catheter also.

FATAL HÆMORRHAGE FROM SMALL INTESTINE FOLLOWING APPENDICECTOMY.[1]

By Alan T. Roberts, M.B., Ch.M. (Sydney), F.R.C.S. (Edin.),
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The patient, a girl aged seventeen, was admitted to the Newcastle Hospital for operation for chronic appendicitis for which she had been referred two months previously. She complained of constant pain in the right inguinal fossa. There had been no vomiting, but nausea at times. There were no urinary symptoms and the bowels acted regularly. The menstrual periods were regular and she was menstruating at the time of the operation. The urine was acid, contained no albumin or sugar. There was a deposit of five to eight pus cells per field.

Operation was performed on January 3, 1929. A thickened chronically inflamed appendix was removed. Fourteen hours later I was called to see her and found her collapsed and exsanguinated and bleeding freely from the rectum. Thinking that this hæmorrhage was coming from the inverted stump of the appendix, I reopened the abdomen. I found all ligatures intact. Gum acacia solution was given intravenously and she improved slightly, but died three or four hours later.

Post Mortem Report.

Stomach and intestines were pale except the lower 15·0 or 17·5 centimetres (six or seven inches) of the ileum and the whole of the large intestine which were filled with partly clotted blood. No bleeding point, cut vessel or other source of hæmorrhage could be found. There was no blood or free fluid in the peritoneal cavity. In the lower 15 centimetres (six inches) of the ileum there were four or five thickened areas of mucous membrane, thickened Peyer's patches or early ulcerations. These were removed for section and microscopical examination, but nothing abnormal was seen. The bleeding appeared to be a general oozing from the lower portion of the ileum, which was congested and reddened.

Reviews.

LISTER REDIVIVUS.

Lister Redivivus! Why, Lister is alive in every cell of every surgeon's cerebrum, aseptically too. Why, Lister is the very matrix of the surgeon's being. The modern surgeon thinks Lister, is Lister, even if he does not always act Lister.

Sometimes that which he would not, that he doeth, but all that a surgeon would do, all that he thinks, can be brought down to the common denominator of Lister. Surely a scientific religion whose votaries practise almost the

[1] Read at a meeting of the Newcastle Hospital Clinical Society on February 7, 1929.

same ritual from China to Peru, have almost the same usage from Edinburgh to Sydney, a religion by whose varying preponderance the greater or less civilization of any country may be gauged, a barometer whose readings show the degree of trustworthiness of the individual, as well as the universal incidence of the principles on which he acts: can this religion be in danger of indifference and disuse?

Surely it would be as impossible to pick the words and thoughts of Shakespeare out of the English language, as to wash a surgeon clean of Listerism and slake his drought of it.

But the *vox clamantis Halfordii* reaches us[1] and would give us pause.

The categorical imperative issuing from Brisbane is that we return to the primal practice of Lister in sack cloth and ashes not in pure white gauze, aseptic and wonderful.

But evolution will go on evoluting. Lister himself who almost wiped out the septic death rate of compound fractures of the lower extremity, Goliath-like though it was, with a piece of rough lint soaked in pure carbolic acid, soon evolved into the less caustic though more irritating atmosphere of the carbolic spray. The use of the fluid carbolic and the carbolized spray owned the same intellectual parentage which abolished them both. His principles, however, remained the same, though his application of them varied.

Nature could not give one individual everything, she made Lister, the benefactor of the human race *par excellence*, the first glance one got of him revealed his Olympian origin. If his razor knew not his upper lip and chin, he might have sat for Olympian Zeus's portrait.

His fingers were not as supple as his mind and a lot of dressings of all sorts with the imprint of his genius on them were elaborated by other men, lesser men of course, who nevertheless helped on the evolution of Listerism. Once had I the misfortune to see him from Olympus, resecting a tuberculous wrist. The antiseptic management of the operative field was, of course, most interesting, the pertinacity of the great man, as great as himself, but although born an Olympian, the father of modern surgery and of much of the surgery to come, he was not a born operative surgeon. His greatness had a back ground in his large simplicity, as effective as the blue of Fra Angelico. One evening meeting he was asked at King's College, how he would antisepticize a sponge, would he boil it? He replied that he had never tried boiling one, but if the meeting would take care of itself (it was a small one) he would go to his rooms (which were near) and boil a sponge and see what it felt like. What natural honesty of thought and purpose! And yet I have heard members of ordinary humanity affirm what a boiled owl felt like and I am sure they never went home to boil it. As I had the friendship of Sir Rickman Godlee, Lister's nephew, I fear these slight remarks are in danger of becoming part of my anecdotage, so I will say that in the fullness of time after receiving the grateful homage of a world, that Alexander the Great might have envied, Lister departed from among men, but his principles and his practice went on with their evolution.

It might be said in tabloid form that in ordinary inflammatory conditions the *materies morbi* is alive, that it will propagate its species to incredible numbers, therefore it must be killed *in situ*; but it cannot be killed when it is actually in the tissues without injuring or killing the tissues themselves; therefore it must be prevented gaining access to the tissues.

Thus when the mists begotten of the steam spray cleared away an aseptic heaven revealed itself to the worshippers (how staggering it would be to find heaven smelling of carbolic!).

Alas! from an imperfect world, imperfect even after eighty odd years of Lister, the heavens are not always to be seen in all their purity.

It was of things certain that operative surgery would become a specialized portion of surgery and that the surgeons practising it soon got tired of the dirty difficulties in the way of essaying it on the ground floor of general practice, so they went up very proudly to the *piano nobile* of asepsis, to which access is made by the ladder of antisepsis. From this eyrie, the heavens indeed opened to them, no morbid cloud stained the white radiance of their aseptic activities.

For a time, but history has a way of repeating itself and is it not true, 'tis in Holy Writ, that Eutychus fell from the upper story? 'Tis only too true the operating surgeon glorying in his purity suddenly fell even as did Eutychus and what crowned the annoyance was that the occasion of the slip was not always to be discovered.

To be wise after the event is the prerogative of the surgeon even as it is of the historian, but the most caretaking of aseptic surgeons will sometimes be confronted with a failure of asepsis, of which all his brains will not find the cause. This is exceedingly disquieting, but it certainly does not mean that the aseptic heaven must always be clouded.

Aseptic operations are the natural outcome of antiseptic measures, but the antiseptic chemical no longer fights alongside the surgeon. Its rôle is the preparatory barrage and it is always possible that this may not be quite so searching as the surgeon expects and desires. The price of asepsis is eternal vigilance. If the vigil is faithfully kept, the asepsis will keep faith too, so the *piano nobile* will hold the view of the pure sky, even though the lightning strikes once in a lifetime.

There is another startling factor coming into view; the operating surgeon took for granted that his property was freehold, but he is finding that even he is not free from the eternal flux, several operations seem to be slipping from his domain, those of the gall bladder to some extent, those for varicose veins in the lower extremities, hæmorrhoidal plexus and those for tuberculous glands seem to have become entirely extraneous. Various tumours and growths avoid his knife, too, with increasing frequency. How about downstairs, how about the general practitioner working in the midst of all the nonsense noises of the world, near the gutter too and the highway, where humanity, the chief carrier of wound unrest, swelters along, playing host to a great host of enemies, but even man, germ laden as he is, looks up to the *piano nobile* at times for help and, I may mention, through an aseptic conjunctiva.

The general practitioner has many disadvantages compared with his *confrère* upstairs; for example, that blessed word standardization (rapidly displacing Mesopotamia) though it was evolved in England, is writ largest in North America, hypnotizes everybody.

The operating surgeon can attain to a considerable distance towards standardization and simplicity in his treatment of wounds, wounds which be it remembered are mainly of his own making. How use doth breed a habit in a man! He is thus able to call his subconscious self to aid his cogitative self. Skill to do comes of doing, so after a time his hands and their attendant fingers become almost automatic, leaving his brain absolved from motor duties and clear for the decisions of judgement.

With him nearer humanity below, wounds are generally not made by himself, they are made by anything else in the universe and Nature refuses to standardize them, although man ventures at classification.

Automatism is distant in humanity's wounds as seen by the general practitioner; he cannot treat all his wounds by a similar usage. He is perforce driven nearer antithan α privative in his fight with sepsis.

If antisepsis were but anointing wounds with germ killing fluids, all would be easy. Germicides are as two edged swords and human tissues, subjected as they are so frequently to insult and injury, receive the insults and the injuries in a world which is mechanical rather than chemical.

Thus the general practitioner is very often left with the direful knowledge that his patient's wound has already

[1] "Lister Redivivus: An Essay on the Undue Prevalence of Sepsis," by A. C. F. Halford, M.D., B.S. (Melbourne), M.D. (Queensland); 1928. Brisbane: Sapsford Brothers. Royal 8vo., pp. 110.

been inoculated with the growing causes of inflammation and he has nought which will remove them, short of actual ablation.

Antiseptics of various dilutions in water are his friends, but friends who may do harm as well as good. To what enormous proportions antiseptic measures may attain. A friend in a country town in Victoria was a very excellent operating surgeon, but his manual skill was rebuked by the overgrowth of his antisepsis.

Before an operation he would take a strong carbolic bath, soaking in it. He often felt ill after this rigour of antisepsis. He denied it, but I could not but think he was related to the amateur actor who could not be stayed in blacking himself all over when he played Othello. My friend's hands were bitten into antiseptic despair by his preparation and even after the operation he carried a much too voluminous aura about with him down the street. He told me his whole being revolted against carbolic. I believe even his urine looked black at him at times. He got good results, but I am sure he lost 25% of his surgical aptitude in his spacious antisepsis. We have no sepsis-meter to help us in our antiseptic efforts; we are certain to overdo it or underdo it.

Sir Victor Horsley years ago asked me to help him with several spinal operations in his private practice. I knew to some degree what to expect, as I had seen the master at the National Epileptic Hospital. Oh! how he splashed wisdom and antiseptic fluid about the operating room! I felt almost swimming in them.

It is impossible to overdo wisdom, but antiseptic fluid, yes, although it must be said that we floated to success on it.

There is no need to quote cases of under antisepsis, their name is legion for they are many. Instead of the one definite objective, which is the care of the operative surgeon to the exclusion of alien thoughts, the general practitioner has a multiplicity of petty cares, most of which can grow to be great ones.

Again the operating surgeon gives himself a competence of time for each effort, cutting it into lengths to suit himself before the event; the general practitioner has to cram events into time "and no space between." The operating surgeon can crown his work with both space and time, each in adequate quantity.

It is sad to contemplate that, while our sympathy settles on the ground floor, the honour and the glory often float to the *piano nobile*.

In addition to all these material considerations there are ethical conditions affecting each status in somewhat different ways. The human being who is farthest on the road towards perfection, possibly passionless perfection, is he or she whose inhibition machinery boasts the smallest scintilla of friction. Motion and speech are two most human functions and yet the "Compleat Chirurgeon" finds notable occasions for their inhibition in himself and in his assistants. Take, for example, an operation on the knee joint, inhibitions strew the path to success. The surgeon likes him to be operated on, to come to the table as nearly in his ordinary condition as may be, that is, inhibition of starvation and purgation. Inhibition of excessive cleansing of skin producing roughness and minute abrasions. Inhibition of wanting to see and feel unnecessary parts of the joint, therefore a small incision, which takes less time both to make and to repair, rendering aerial infection less likely and saying no to wandering fingers and instruments and to inquisitive eyes.

Thus the surgeon will, I hope, inhibit himself removing more of a cartillage, which has lost its mooring (if such be the condition for which he is operating) than is to be done easily, trusting as he should to there being accommodation for the left remnant in the lumber room at the back of the joint. This wants some inhibition on the part of the surgeon, especially if he should be an individual with a predilection for thoroughness, which being translated from the copy-book into surgery often becomes mischievous meddlesomeness.

During the actual operation, which need not be long in time, but should be deep in concentration, nobody in the room should move, except the operator and the assistant, thus inhibiting avoidable movements in the air and nobody should speak. Inhibition has to be sturdy to satisfy all these demands and there are yet more, as the surgeon applies the flannel bandage himself, thus inhibiting tradition, which would bind the limb with an angle in it to a splint as straight as a Euclidean line, which at once would introduce a cause of unrest.

The general practitioner knows all this, but what chance has he on the ground floor of posting inhibitory notices to such an extent in time or space?

Lister knew that his compound fractures had come from a dirty world, therefore he must use a strong antiseptic to neutralize the dirt. The dirt of the world gets worse in war time and reaches its unclean climax when the war is waged *more prussico*. Thus in the great war, our great war, many Eutychuses fell from many upper stories, but they rose again calling loudly for antiseptic assistance. This they got in many forms, the conditions of salvation were the same, the roads to it many. Every war wound was to be looked upon as infected, as it very generally was and every wound was to be subjected to operation, which it generally required.

Two causes of disease in wounds were intractable to antiseptics, but fortunately the biochemist was equal in life-giving to the death-giving of both tetanus and gas gangrene and the horse, once the carrier of and for mankind, now gives up his transports and soberly submits to the advice: "Safety Serum First."

This all seems mental welter, but it can all be reduced to terms of Listerian evolution. To Dr. Halford, whose book bids us take stock of our present position, ever wise advice in all sciences, one would recall the answer of Solon (whose wisdom was proverbial in antiquity) to one asking him: "What was the best form of government?" "For what country, at what moment?" was the immediate reply, also interrogative.

Prospero's answer to Miranda, when she asked about their leaving Milan is Brevity and Wisdom married.

She says: "What foul play had we, that we came from thence, or blessed was't we did?" "Both, both, my girl."

Thus the answer to what Mr. Hamilton Russel cogently calls Dr. Halford's cry for help, coming as it does from the hurly burly of general practice, is to be found in the estimation of conditions.

Thus if the surroundings of the wound and oneself allow it, asepsis so often "the desire of the moth for the star" is to be attempted, though of course only when a close approach to it can be certainly made.

Surgical asepsis can come only of preexistent antisepsis. If conditions be favourable, antisepsis may be allowed to lapse in favour of its child asepsis. If conditions be not favourable, the existing antisepsis runs as the definite policy.

Both Solon and Prospero deserve a hearing.

THE LIVER AND APLASTIC ANÆMIA.

In a small book entitled "Acute Aplastic Anæmia," Dr. Hayes Smith gives an interesting detailed account of a case of that condition with recovery, occurring in a child aged two years and two months.[1] The clinical evidence is supported by the details of frequent blood examinations.

Recovery is attributed to the use of liver extract administered by the subcutaneous route. The author concludes that in aplastic anæmia and pernicious anæmia alike, the primary seat of the disease is not in the bone marrow, but in the liver and that the bone marrow function is controlled and correlated by means of a hormone produced in the liver.

In the light of recent knowledge this conclusion appears justifiable.

[1] "Acute Aplastic Anæmia: Its Relation to a Liver Hormone," by A. Hayes Smith, with pathological details of the case by C. J. Young; 1928. London: H. K. Lewis and Company, Limited. Royal 8vo., pp. 88. Price: 6s. net.

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The Prevention of Hydatid Disease.

Few problems in preventive medicine appear to be easier of solution than the combating of hydatid disease. The mode of infestation of dogs with *Tænia echinococcus* (*Echinococcus granulosus*, Batsch) is known; there is no mystery concerning the mechanism of the formation of hydatid cysts in man, sheep and other animals from the time when the eggs are ingested until the embryo has come to rest in one or other organ, has given rise to a cellular reaction and is established in the vesicular structure lined with a typical laminated hyaline membrane. These processes have been studied and determined both experimentally and in the course of natural infestation. Those who are charged with the preservation of the public health, being in possession of this information, are directly responsible for the prevalence of hydatid disease in Australia and New Zealand. In his classical book on the subject Dr. H. R. Dew has endeavoured to determine the frequency in the various countries of the world and to express the incidence in a uniform manner for the purpose of comparison. It is not easy to find a formula according to which the infestation rate in different countries can be compared. The factors involved are the dog population, the sheep population, the human population and the slaughter house conditions. Ignoring for the moment sources other than the sheep, it may be assumed that the relative number of infested sheep is less important than is the relative number of dogs admitted to the slaughter yards where cyst-containing offal is available. It is obvious that if diseased organs are thrown to hungry dogs, the number that will harbour hydatid tape worms, will depend within certain limits more on the dogs than on the sheep. The worst conditions will be where large numbers of dogs pick up infested liver and lungs and where there is a dense population in the immediate vicinity of the yards. On the other hand relatively little hydatid disease may occur in the human population in rural districts if the dogs fed on diseased offal have little chance of entering houses or of being fondled by children in the streets or vacant places. It thus appears that it is not quite safe from a prophylactic point of view to gauge the incidence as a percentage of the number of persons treated in public hospitals. The best index would be the multiple of the percentage incidence of infestation of dogs and the percentage incidence of hydatid disease in human beings. Since the latter figure cannot be ascertained with accuracy, the best substitute would be the percentage frequency of persons who react to the Casoni test among a large community, such as the total hospital population. At the present time these figures are not available and in consequence we have to be satisfied with the relative frequency of hydatid infestation. From the data at hand it seems that the incidence in Victoria is a high one, that the disease is prevalent in New South Wales and in South Australia and that it is not infrequent in other parts of Australasia.

Dr. Dew reproduces the placard issued by the City Council of Melbourne from which the people can obtain information concerning the manner in which hydatid disease is spread from sheep to dogs and from dogs to human beings. The fundamental measure in the campaign against human infection is unquestionably the prevention of infestation of dogs at slaughter houses. We have pointed out on previous occasions that the preservation of the public health cannot be adequately accomplished without the aid of a relatively large number of veterinary inspectors. All offal containing hydatid cysts should be destroyed by heat. In each State and in the Dominion of New Zealand it should be made a penal offence to feed dogs with raw infested offal. In the absence of some stringent law, veterinary inspectors are powerless. Armed with statutory authority they could soon break the practice of allowing dogs to have access to this dangerous material. Skilled veterinary inspectors are able to detect hydatid disease in sheep tissue and organs save when the process is in the earliest stages. Those in authority at slaughter yards and private

abattoirs should be compelled to obtain certificates of freedom from hydatid disease of each carcass or in the event that cysts are found, certificates that the infested material has been destroyed by heat. The habit of admitting dogs to slaughtering places should be discouraged, if not prohibited. The veterinary inspectors should urge owners of dogs that are found in the neighbourhood of the yards to administer arecoline hydrobromide as a precautionary measure. Strict enforcement of a common sense law would eradicate hydatid infestations within a short time, while education of the public regarding the dangers to children fondling dogs and permitting dogs to stray into abattoirs would probably achieve very little in a score of years. This is a matter of extreme importance and the full responsibility rests with the public health authorities.

Current Comment.

MALARIAL TREATMENT AND GENERAL PARALYSIS.

Since the introduction by Wagner-Jauregg of the treatment of general paralysis of the insane by malarial infection much clinical improvement has been reported. Sometimes the improvement has been spectacular and the patient has been able to resume his former mode of living and to take his place among his fellows; sometimes the improvement has not been so pronounced or it has been of a temporary nature and sometimes the patient has appeared to be no better as a result of his added infection. It is obviously not sufficient to accept the clinical facts and to strive by clinical means to obtain better results. It is necessary to discover how these results have been obtained, to determine the exact part played respectively by the malarial parasite and by the spirochæte-laden tissues of the brain. Before this is possible, it is, of course, essential that the pathology of the abnormal process at work in the cerebral tissues should be understood. In other words (and this cannot be repeated too often) it is infinitely more important to gain a knowledge of the essential nature of a disease and of the action of a therapeutic agent, than it is to give relief to even a considerable number of persons. Attainment of the former makes for progress, contentment with the latter results in tinkering.

One method of gaining information is by a study of the *post mortem* changes found in brains of persons who have been subjected to malarial treatment. Several workers have reported observations of this nature. Among them are Sträussler and Koskinas, Kischbaum, Jakob and Lehoczky. Richard B. Wilson, working in Jakob's laboratory, has endeavoured to discover what changes take place in the organism after the introduction of the malarial parasite that brings about the improvement.[1] He has recorded his observations in forty-seven cases. He refers shortly to the clinical histories of some of the patients, but bases most of his remarks on the *post mortem* findings. The clinical course of thirty-eight patients was fairly typical and the diagnosis could be verified by histological methods. These are grouped according to the interval which elapsed between treatment and death. In seven instances death occurred during treatment, in six the interval between treatment and death was four to fourteen days, in three it was three to six weeks, in five three to five months, in four six to nine months, in ten one to two and a half years, in three three to five years. Wilson points out that roughly three divisions are possible as far as the reaction to treatment is concerned. First, there is a period of exacerbation of all the pathological changes, commencing during treatment and persisting until from three to six weeks after treatment. Secondly, there follows a period of restoration which may continue for years; this was found in approximately half the cases. Thirdly, there may occur any time after six months a new flare-up in the histological process, a period of recrudescence. The first of these stages was manifested in the bodies of sixteen persons who died within six weeks of the cessation of treatment. Wilson describes the changes as a severe diffuse general paralytic process. The prominent feature was a strong glial proliferation. There was a well defined iron reaction in walls of the blood vessels and in the microglia; there was a derangement of the cortical layers and of the nerve cells. Meningeal and cortical perivascular infiltration was noted. The lymphocytes in the meninges were most numerous during treatment and diminished gradually thereafter. Spirochætes were found in one instance. In thirteen cases after six weeks and up to two and a half years (the period of restitution) there was a gradual improvement in the arrangement of the cortical layers and nerve cells and at the same time a rather rapid and considerable reduction of infiltration and of glial proliferation. There was a considerable reduction of iron in the blood vessels and microglia and Wilson regards this as adding support to the serological evidence of a decrease in the permeability of the blood vessels. Between one and two and a half years there was noted in some instances a secondary increase of macrophages in the meninges, of microglia and of iron in the walls of the blood vessels and in the microglia. In none of these brains were spirochætes found. The fact that spirochætes were found only once in the twenty-nine brains thus far considered suggests strongly that malarial treatment has brought about a massive destruction of these organisms. Among the autopsies performed six months to two and a half years after treat-

[1] *Brain*, December, 1928.

ment were six characterized by scattered foci of intense inflammation in which the mesodermal tissue was strongly proliferated (period of recrudescence); in one instance this had progressed so far that typical gummata were present. In five of these six spirochætes were found. As far as the serological reactions were concerned it was found that histological improvement and serological improvement went together. There was no serological improvement in the last mentioned group of six cases. It is suggested that in these circumstances the patients might have benefited by a new therapeutic effort. Reference will be made to this question later. It should be specially noted that the changes found during the period of recrudescence are essentially different from those seen in general paralysis.

Sufficient detail of Wilson's work has been given to allow attention to be drawn to his main conclusions. These are very useful, but it would have been more interesting had he gone wholeheartedly into the question of the way in which malarial infection acts in the treatment of general paralysis. He concludes that an extensive destruction of spirochætes takes places and points out that if they are not destroyed, they may be rendered inactive for months. When this happens, they may become active again or proliferate and give rise to the period of recrudescence already described. The spirochætes constitute the antibody which enables deviation of complement to occur when the Wassermann test is performed. It is thus easy to understand that serological findings corresponded with the histological observations in most of the cases in Wilson's series (the exceptions will be mentioned later). When the stage of recrudescence occurs, spirochætes are active and proliferating and a reaction will occur to the Wassermann test.

As far as the way in which the destruction of spirochætes is brought about is concerned, the fever occasioned by the malarial attack must be held responsible. Fever causes arrest of tissue changes of nerve cells as a result of a partial fluidification of lipoid. The *spirochæta pallida* produces dissociation of protein in the invaded nerve cells. It may be assumed that the result of the change in the lipoid, caused by the fever, is to lock up the products of dissociation. In all probability the spirochætes die when the concentration of dissociation products is sufficiently great. On this hypothesis it is possible to explain non-response to malarial treatment and also the period of recrudescence referred to by Wilson. There will doubtless be resistant forms of the spirochæte, the fever may not be sufficient to produce the necessary lipoidal change or the spirochætes may be present in unusually high numbers. In these circumstances the response to treatment would either not occur at all or would not be complete. If all the spirochætes were not killed, they would attack the cells again after their recovery and the nerve cells in all probability would remain vulnerable as a result of the initial disturbance. This would explain the period of recrudescence.

A concluding reference must be made to the question of the serological findings in regard to the histological changes. The correspondence between these in the majority of instances has already been mentioned. Wilson states that the fact that clinical improvement does not coincide in some cases may mean that, although the spirochæte has been eliminated, the disturbance to cell metabolism has been so severe that functional recovery is no longer possible. In these circumstances renewed therapeutic efforts would be of no avail. On the other hand, if there has been no improvement in the serological reactions up to six months or longer, it would indicate the presence of spirochætes which might cause a new flare-up of inflammation. In these circumstances further treatment might do good. Wilson admits that it is impossible to formulate definite conclusions from so small a series of observations; at the same time he thinks that it is possible that there may be a correlation between the histological process and the serological reaction. With this we are in entire agreement.

AIR EMBOLUS.

Reports of death from air embolus have frequently appeared in medical literature, the *post mortem* findings have been described and different theories have been advanced to explain the rapidly fatal issue. Some observers have not been able to produce death by introducing air into the venous circulation and this has been explained in some instances by the fact that the blood is capable of absorbing a certain amount of air. Brouardel denied the possibility of air embolism producing death in abortion and Mollison, writing in this journal in 1924, stated that he did not believe that air embolism occurred in abortion. He pointed out that death may result from reflex inhibition of the heart when there has been any interference, particularly unlawful interference, with the female genitals. Shortly after Mollison's article appeared, Stratford Sheldon wrote to this journal a letter in which he reported several deaths from embolism as a result of criminal interference with the uterus, observed by himself and Palmer. C. P. Mathé[1] has recently reported a case of fatal embolus due to the inflation of the bladder with air prior to the performance of suprapubic cystotomy. At *post mortem* examination the characteristic bubbles and coarse froth were found in the large abdominal veins, right side of the heart, lungs and liver. An ulcerated carcinoma was found in the bladder. In all probability it was here that the air gained entrance to the circulation. The lesson of the danger of inflating the bladder with air is obvious. In the absence of the typical history it is necessary to exclude the presence of gas-forming organisms when gas is found in the blood vessels at autopsy.

[1] *Surgery, Gynecology and Obstetrics*, March, 1929.

Abstracts from Current Medical Literature.

GYNÆCOLOGY.

Radiation of Spleen for Uterine Hæmorrhage.

G. H. Schneider (*Monatsschrift für Geburtshülfe und Gynäkologie*, October, 1928) refers to the value of radiotherapy in severe hæmorrhage associated with myomata, cervical carcinoma and menorrhagia at the menopause. While radiation of the ovaries will cause cessation of menstruation, this result is somewhat uncertain in its onset. In the majority of instances hæmorrhage recurs for one or two periods and this may be serious in exsanguinated patients. He has not found that radiation in the first half of the intermenstrual period is followed by immediate amenorrhœa, as claimed by Seitz and Wintz. However, if the spleen be treated at the same time as the ovaries, absolute amenorrhœa occurs with no recurring hæmorrhage and thus is of great value. He recommends that the splenic field be radiated with two thirds to three quarters of the skin erythema dose which will insure that the spleen receives approximately 30% of the amount administered.

Artificial Abortion.

J. Kallinikoff (*Monatsschrift für Geburtshülfe und Gynäkologie*, October, 1928) states that from 1921 to 1923 at Saratow he induced one thousand abortions. In only 5% was the operation performed for medical reasons. The usual indication was on economic grounds which had been declared legal by the Soviet. In pregnancies up to four months for *primiparæ* and five months for *multiparæ* the operation was performed in one sitting and usually without anæsthesia. The cervix was dilated with Hegar's dilators up to size 19 for pregnancies of five months' duration. Digital exploration was done only in cases of severe hæmorrhage. Usually ovum forceps were inserted and the uterine contents removed. Following on this a strip of gauze soaked in iodine was inserted for twelve to twenty-four hours. The patient was sent home to bed and allowed to resume work in four days. Three-quarters of the operations were done before the end of the second month and 75% of the women had abortion performed more than once. The greatest number of abortions on one woman was eleven. Parametritis was noted in thirty instances, salpingitis in ten and pain and tenderness in the lower part of the abdomen in fifty. Rigors occurred in ten patients.

Post-climacteric Hæmorrhage.

W. Benthin (*Monatsschrift für Geburtshülfe und Gynäkologie*, October, 1928) discusses the ætiology of non-malignant uterine hæmorrhage after the menopause. He divides the cases into three groups: those characterized by inflammatory changes in the endometrium, those with polypus formation and those in which no pathological changes can be found. More than half the cases belong to the first group. Because of the fear of carcinoma curettage is performed and produces little more than necrotic *débris*. This is due to the retention of secretions in the uterine cavity resulting from occlusion of the cervix or senile colpitis associated with ascending infection. Polypus formation is relatively common and is seen in 25% to 30%. Hæmorrhage is more intense and associated with pain in the lower part of the abdomen. The uterus is generally enlarged and the diagnosis is usually made with the finger after dilatation of the cervix. Polypi as a rule grow in the region of the insertion of the tubes. The question of endocrine deficiency is raised with those patients in whom no local signs can be discovered. Cystic degeneration of the ovaries is common after the menopause. Benthin considers that the hæmorrhage in these circumstances is due to uterine apoplexy caused by the sclerotic condition of the uterine arteries. Curettage is required in all instances to exclude carcinoma. It acts in most instances as a curative agent and only in a few is it necessary to explore the uterine cavity with the finger or to adopt more radical measures.

Treatment of Septic Abortion.

M. Mgalobeli (*Monatsschrift für Geburtshülfe und Gynäkologie*, November, 1928) has analysed the results of treatment of 1050 patients with abortion, 307 of whom manifested febrile changes. He discards the conservative method of waiting as unnecessary and because it keeps the patient too long in hospital. In his opinion the uterus of every patient should be curetted as soon as possible and he states that the prognosis depends largely on the period at which this is done. Such active measures are, however, contraindicated if the infective processes have spread beyond the uterus, no matter whether they be localized in the pelvis or whether a general infection of the blood stream has occurred.

Hæmorrhage at Puberty.

F. Kermauner (*Wiener Medizinische Wochenschrift*, November, 24, 1928) has had sixty-three patients with hæmorrhage at puberty in a series of ten thousand patients admitted to gynæcological wards. While some of them manifested hypoplasia of the genital tract, he did not consider that the proportion differed from that seen in normal girls. On the whole blondes were more affected than brunettes. Those with endocrine anomalies comprised six with hypothyreoidism, two with hypertrophy, one with acromegaly and one with pituitary adiposity. Pulmonary tuberculosis was seen in six instances. Many of the patients manifested a loss of tone in the uterine blood vessels associated with a softness of the musculature almost resembling Hegar's sign of pregnancy. Improvement in general health must always be the first step in treatment. Fresh air and light will combat any tuberculous tendency, but at the same time it is wise to estimate the basal metabolic rate to exclude endocrine influences. Many patients are asthenic and the use of an abdominal belt to support the viscera together with the correction of constipation is necessary. Four patients were subjected to resection of the ovaries and two of these had cysts removed; in no instance was there any effect on the hæmorrhage. Glandular preparations have been administered by all routes with varied results which were more pronounced in the milder grades. For this type iron and arsenic give better results. Radiation of the thyreoid in the presence of excessive secretion was useful, but similar treatment of the pituitary because of its relationship with the ovaries was useless. The uterine cavity was curetted in fourteen instances. The material removed contained much connective tissue. In only one patient did complete recovery ensue. The remainder either had amenorrhœa for several months or else regular periods which soon became excessive. Radiation of the ovaries as well as of the spleen and liver was used in the majority of patients with moderate success although there were many failures. Naturally only small doses were applied to the ovaries to avoid castration. Little success followed the use of calcium preparation, blood transfusion, pituitary extract and ergot. Although in some instances a psychic basis may have been present, the author is opposed to any attempts at psychoanalysis of young girls. While admitting that no sovereign cure exists and that various lines of treatment must be pursued, he considers that improved hormone treatment offers the best chance of success.

Indications for and Results Following Cæsarean Section.

T. Heynemann (*Deutsche Medizinische Wochenschrift*, September 14, 1928) reviews the indications and results obtained in 265 cases of abdominal Cæsarean section mainly by the low cervical incision. Deaths resulted in twenty-two instances (8·3%), due mainly to contracted pelvis, eclampsia and *placenta prævia*. In the presence of contracted pelvis he never induces premature labour nor does he perform pubiotomy. Section is always done if one or two hours after rupture of the membranes no advance of the head has occurred. Malpresentations in *primiparæ* with early rupture of the membranes and weak pains are another indication, as is also the presence of a contraction ring. Asphyxia of the child in a

patient with a rigid cervix with rupture of the membranes is also admitted as an indication, although the author warns that many of these children have congenital malformations or diseases. Operation in frankly infected patients is undertaken only if the child be alive and after the risk has been accepted by the parents. For eclampsia section is done only for *primiparæ* when no improvement occurs after venesection. Patients with central *placenta prævia* when the child is viable and living and the cervix closed, are treated by section. In all other forms the more usual methods are employed. In conclusion the author pleads for better instruction of the student so that many of these preventible conditions can be avoided.

Nasal Application of Pituitary Extract.

D. Adlersberg and O. Porges (*Wiener Medizinische Wochenschrift*, July 21, 1928) describe the administration of pituitary extract by the nasal route. It was given in this way to a patient from whom a glioma of the orbital cavity had been removed seventeen years previously. The patient had never menstruated and the sexual characteristics were infantile in type. The daily urinary output was seven litres; the urine was of low specific gravity and diminished chloride content. The condition was typical of *diabetes insipidus*. Injections of pituitary extract caused rapid improvement after failure with "Novasurol." Because of the difficulty of giving daily hypodermic injections the use of pituitary in the form of snuff was tried with immediate and prolonged success. In a second patient with primary polydipsia following on an attack of encephalitis the daily output of urine was reduced from twenty to four litres. The authors recommend the nasal route as a comfortable and safe way for continuous administration of pituitary extract. They have not had enough experience with it in obstetrical conditions to give an opinion on its value under those circumstances.

Treatment of Uterine Perforation.

C. G. Barsky (*Monatsschrift für Geburtshülfe und Gynäkologie*, August, 1928) describes the ætiology and treatment of uterine perforation following the induction of abortion. From a survey of the literature he states that the ovum forceps and the curette were responsible for more than two-thirds of the perforations. The prognosis depends partly on whether the perforation occurred in a well equipped hospital or in private practice. The former group can often be treated conservatively, while the risk of infection in the latter type generally necessitates a radical operation. The diagnosis is usually easy, especially if omentum or even a loop of intestine prolapses through the perforation. The ovum forceps and the curette tend to cause much more injury to abdominal tissues as well as to the uterine wall than the sound or finger. Many authorities in these cases prefer total removal of the uterus because of the risk of infection and adopt more conservative measures solely for cases in which the sound has made a small perforation. The author takes the stand that as many of the patients are young women, every endeavour should be made to preserve the uterus. Laparotomy should be done, any intestinal damage repaired and the perforation closed in layers with drainage through the posterior fornix in all suspicious cases. The best preventive measure is the thorough instruction of all students in the correct technique of curettage.

Rupture of Scar Following Lower Segment Cæsarean Section.

K. Hellmuth (*Münchener Medizinische Wochenschrift*, September 21, 1928) has gathered from the literature reports of sixteen cases of rupture of the uterus in pregnancies following the lower segment or cervical intraperitoneal Cæsarean section. Three additional cases are described in detail. Each of the patients in these three cases had a febrile puerperium and all such patients should be considered as possible candidates for rupture in future pregnancies. One Cæsarean section done for *placenta prævia* illustrated the difficulty of obtaining a good scar when the placental site and the operation incision coincide. In two instances the rupture occurred at the end of pregnancy, and in one during the first stage of labour. Hysterectomy was performed in one instance and the rupture sutured in the others. Reviewing these results, he states that Cæsarean section must be more restricted in its scope because of the real risk of rupture. Too many operations are performed for conditions apart from definite degrees of contracted pelvis. Especially to be condemned is section for eclampsia and *placenta prævia*, except in rare instances. Finally he quotes the remark of Gauss at the last German congress that happily the dawn of Cæsarean section had begun.

Analgesia in Gynæcology.

J. Halban (*Wiener Medizinische Wochenschrift*, July 21, 1928) refers to attempts to relieve pain in various gynæcological conditions. After describing the viscero-motor reflexes and the cutaneous areas of Head, he states that pain can be abolished if the reflex arc be broken at any point in the circuit. In many cases paravertebral injections in the third or fourth lumbar region will immediately relieve inflammatory lesions of the appendages. Although the technique is not difficult, he considers that something more simple is required for general practice. He therefore recommends the infiltration of the hyperæsthetic skin areas with twenty cubic centimetres of a 0·2% solution of "Tutocain." The centre of the zone is first infiltrated and then four depôts or wheals are made external to the fascia and overlapping the area for a distance of one and a half centimetres. Pain is immediately abolished. In acute cases failure may result, because the subserous tissues have spinal nerve connexions, but in chronic conditions he has never had a failure. Parametritis is generally stubborn for a similar reason. Success has also followed the use of these injections with inflammatory conditions of the gall bladder, appendix, kidney and in thoracic pain.

Indications for Abortion.

O. Pankow (*Deutsche Medizinisohe Wochenschrift*, October 12, 1928) discusses in detail the legal and medical aspects of termination of pregnancy for various indications. He is opposed to the evacuation of the uterus in the presence of insanity or epilepsy of the father. Statistics show that most children of such parents are quite healthy and that it is impossible to forecast whether the offspring will be normal or abnormal. He then refers to the increasing number of abortions performed for social and economic reasons and points to the serious loss of life in Germany resulting from such operations. It is estimated that 48,000 women die annually following on abortion. He is in favour of abortion in all cases of pulmonary tuberculosis where the lesion is active and progressive. Patients with quiescent tuberculosis should, however, be left alone. Laryngeal tuberculosis is considered to be equivalent to an active condition and abortion is recommended. If renal tuberculosis be present, attention should be devoted to the kidney and not to the pregnancy. Bone and joint tuberculosis likewise call for no active interference. The next most important indication is *hyperemesis gravidarum*. Pankow considers that in every instance hospital treatment must be insisted upon before abortion is performed. Early and thorough treatment will cure the vast majority of patients and failing success emptying of the uterus is required. Cardiac, renal and general complications require the same consideration as tuberculous conditions and abortion should not be considered too hastily. Insanity and nervous lesions in the female comprise a group in which it is difficult to come to a decision. Before abortion is performed, a consultation with an alienist or a neurologist is most essential. Finally, he reiterates his advice never to interrupt pregnancy except after consultation and to perform the operation only with assistance in a properly equipped hospital.

Temporary Sterilization with X rays.

H. Wintz (*Deutsche Medizinische Wochenschrift*, October 5, 1928) discusses the results which he has obtained from the use of the X rays in causing temporary sterilization in the female. It is technically possible to destroy the ripe follicle whilst the primordial ones remain intact. The period of amenorrhœa varies from one to three years, depending on the dos-

age which in general is 28% of the skin erythema dose. If 34% be administered, the menopause is likely to occur. The various structures in the ovary react differently to the rays. Ripe follicles are 25% more sensitive than the primordial follicles, while the *corpus luteum* is about 70% less sensitive than the mature Graafian follicle. The effects of such sterilization on the general well being of the patient have been summarized as follows: No after effects occurred in 26%, slight vasomotor disturbances in 54%, more pronounced changes with inability to continue household work in 18% of patients and 2% manifested definite menopausal symptoms. In no case was there any alteration in sexual feelings nor any disturbance of metabolism, such as deposit of fat. Wintz then considers the effect of such radiation on the fœtus in future pregnancies. In his series of 220 patients who became pregnant, 187 had full term children. Three of these showed signs of congenital defects. He disagrees with Werner concerning the risk of such fœtal abnormalities after radiation and considers that, as 1% to 3% of all fœtuses manifest some malformation at birth, the proportion in his cases cannot be attributed solely to the effects of the rays. Animal experiments so far have not been conclusive in settling this important question. In discussing the indications for its use, he is emphatic that it cannot be considered as a reliable anti-conceptional remedy. In only 4% of women under thirty-five did amenorrhœa extend as long as three years. On the other hand pregnancy has not always followed the return of menses, for twenty-two women were still sterile three to four years later. He would reserve its use for patients with tuberculosis when further pregnancy is considered to be undesirable. Its advantage in mild tuberculosis lies in the fact that future pregnancies are possible after cure of the chest conditions. Severe menorrhagia in young girls which has resisted other lines of treatment is also suitable for X ray treatment. He has had thirty-seven patients with fibroids which became definitely reduced in size during the period of amenorrhœa. When the menses returned, in twenty-eight instances they were normal and in four women normal pregnancy and delivery resulted. He warns, however, that it is difficult to administer the correct dosage to the ovaries when the tumour is of considerable size. His best results were obtained with inflammatory conditions of the tubes and ovaries and with pelvic peritonitis. As is well known, each menstrual period has a bad effect on pelvic lesions and is associated with menorrhagia. By suppressing the ovarian function conservative methods of treatment are given a better chance and more rapid improvement in the local condition as well as in general health result. In the majority of instances the pelvic condition was cured during the period of amenorrhœa. Very few failures were noted.

OBSTETRICS.

Effect of X Rays on Future Children.

E. Fischer (*Deutsche Medizinische Wochenschrift*, January 18, 1929) discusses the question of the possible damage to future children caused by the temporary sterilization of women by X rays. Obstetricians are divided in opinion as to the effect such treatment may have on future pregnancies. From his experiments with animals as well as Drosophilia, Fischer is strongly of the opinion that such treatment is not free from harm. He considers that damage may be caused to the chromosomes in the ovum. The union of healthy male chromosomes with possibly unhealthy female ones will result in the birth of an apparently sound offspring in the majority of instances. However, the application of Mendel's law points out the strong likelihood of congenital malformations in the progeny of these offspring. He recounts numerous animal and plant experiments in which this occurred until the sixth generation. In his opinion X rays according to the amount administered have several actions: (i) Destruction of all ova, (ii) destruction of the ripe and ripening ova with no effect on the primordial follicles, (iii) effect on the primordial ova so that death occurs before full ripening, (iv) the radiated primordial ova ripen naturally, but the progeny show malformations, especially in their progeny. This has been fully proven with animals and he considers that the facts also apply to the human race. Therefore he advises cautious advance into a new field of treatment, the consequences of which reveal serious possibilities.

Effect of Ultra-violet Radiation on the Lactating Breast.

E. Vogt (*Deutsche Medizinische Wochenschrift*, August 17, 1928) refers to the beneficent effect of artificial sunlight in promoting mammary secretion. He recommends the use of the quartz lamp after the breast has been emptied by the infant. At first the rays are used for five minutes and the period gradually extended to ten. The lamp is placed eighty centimetres from the breast and if the skin be found not to be sensitive, this distance is reduced to seventy or sixty centimetres. The nipple and areola are protected with a coating of vaseline. At first hyperæmia and erythema are noted and later pigmentation. If there be much cutaneous reaction, a boric acid ointment is used. In the majority of patients a definite increase of secretion is noted after two or three treatments and this is maintained when the application is made twice a week. The author noted that whereas the skin of the abdominal wall reacted more strongly than that of the breasts during pregnancy, the reverse occurred when the breasts were lactating. The use of the rays has proved of benefit to patients who are aborting and who are suffering from mastitis. The use of the quartz lamp enables infants who have been weaned because of failure of secretion, to be placed back on the breast. Observation of infants reveals a rapid increase of weight following on this treatment.

Determination of Sex.

O. Schöner (*Wiener Medizinische Wochenschrift*, January 26, 1929) has been investigating the problem of the determination of sex. He has attempted to correlate the sex of the child with the particular ovary in which the *corpus luteum* is situated. The material was obtained from 1,420 abdominal sections, 123 Cæsarean sections and 142 operations for ovarian tumours. In 754 instances the connexion with the sex of the child was noted. As a result of his work the author comes to the following conclusions: (i) That males and females were produced by each ovary, (ii) that the right ovary produced 57·07% males and 42·93% females, as compared with 41·89% and 58·11% respectively for the left ovary, (iii) that the right ovary is chiefly responsible for pregnancies and that this explains the known excess of male children at birth—one hundred and six males to one hundred females.

Puerperal Thrombophlebitis.

E. Gross (*Deutsche Medizinische Wochenschrift*, October 26, 1928) states that thrombophlebitis of the superficial veins of the leg occurs in 2·2% of all puerperal women, usually in *multiparæ* above forty. It is not easy to differentiate between a mild aseptic thrombosis and a septic infection. In the majority of instances of superficial involvement the cause is a local one due to varicosities. Bacterial infection from the uterus or pelvic organs plays an important part in more deep-seated infections. The superficial lesion tends to remain localized and recovery more or less slowly occurs. There are few references in literature to a fatal termination by sepsis or pyæmia. He then gives the detailed history of such a case in which after a normal labour thrombosis of the internal saphenous vein occurred on the fifth day. At the autopsy septic infection both of the uterus and of the superficial branches of the internal saphenous vein was noted, but no connexion between the two sites was observed. From the clinical development of the condition he believes that the primary focus was in the saphenous vein with secondary metastatic thrombi in the pelvis.

Obstetrical Anæsthesia.

C. J. Gauss (*Deutsche Medizinische Wochenschrift*, January 4, 1929) reviews his results after twenty-five years' experience with various methods of inducing anæsthesia in obstetrics. Chloroform should be used only for limited periods immediately prior to birth, while the prolonged use of ether is excluded because of the bad effect on the uterine contractions. Ethyl chloride also is of value only

as a temporary measure generally to supplement some other method when the head is being born. While gas and oxygen, ethylene and narcylene are valuable preparations, their use is restricted because of the cumbersome and costly apparatus required as well as the need of constant supervision by a medical man. Lumbar and sacral anæsthesia tend to raise the abdominal pressure and do not last long enough for the average labour. The author has not had any pronounced success with the synergistic method of Gwathmey nor likewise with the rectal administration of "Avertin." Morphine and scopolamine have been used for many years with complete success. It requires experience to estimate the correct dosage for each patient, but this soon comes with practice. Recently "Pernocton" has been employed with good results. This is given intravenously and the duration of anæsthesia is from three-quarters to two hours. If further anæsthesia be required, scopolamine is added. The author's present routine is to give all patients an intravenous injection of "Pernocton." This may be sufficient with perhaps the addition of gas or ethyl chloride while the head is being born. In those cases in which labour is likely to be prolonged, injections of scopolamine are added and repeated if necessary. From what the author has noted this combined method promises to be the ideal for obstetric purposes.

Effect of Radiation on the Fœtus.

W. Schmitt (*Monatsschrift für Geburtshülfe und Gynäkologie*, October, 1928) has observed the effects of radiation on the children born to mothers who had temporary amenorrhœa induced by X rays for various reasons. His series consists of twenty-five women who had forty-two conceptions following radiotherapeutic treatment. Eight pregnancies ended in abortion, two in premature labours, thirty-one patients went to full term and one could not be traced. Of those children born at term only four appeared to be poorly developed. Five children died during the first year. Twenty-two out of twenty-nine children have been observed for longer periods and in only four instances (two of these were premature) were the children under developed for their age. One, aged six, showed signs of endocrine deficiency and another, aged three, had some symptoms of mongolism. The author considers that more intensive investigation of the after histories of these children is essential in order to settle the important question of the effect of X rays on the primordial follicles of the ovary.

Kielland Forceps.

K. Schwenke (*Monatsschrift für Geburtshülfe und Gynäkologie*, October, 1928) has made an exhaustive survey of the literature concerning the use of Kielland's forceps and has added the results obtained by him in a series of one hundred deliveries. The forceps were used for high, middle and low positions. The incidence of forceps deliveries was 4·5% and 88% of the patients were *primiparæ*. In the majority the head lay in the transverse position and for reasons of maternal or fœtal distress delivery was essential. With regard to lacerations of the cervix and soft parts, he states that in twenty-one high applications of forceps with the *os* not more than half dilated only one lacerated cervix was noted. Severe vaginal tears were observed in three instances. Contrary to some observers the author noted no injury to the bladder, although in two instances hæmaturia occurred which must be attributed to direct pressure of the forceps. The convalescence of the patients to whom forceps were applied, was not more than half a day longer than that of those whose delivery was normal. He considers that the natal and neonatal mortality is the best indicator of the value of the use of these forceps. Five children were still-born. In two instances no fœtal heart was heard before delivery and in a third it was rapidly failing. The other two deaths were associated with congenital defects and prolapse of the cord respectively. Five neonatal deaths were noted; in two of these no cause could be discovered, intracranial hæmorrhage and tentorial lacerations were found in two instances and one example of congenital malformation was seen. The total fœtal mortality was therefore 10%, but if the fœtal asphyxia as well as congenital defects be excluded, the mortality is reduced to 3%. It is noteworthy that only one fœtal death occurred following the use of high forceps in thirty-three instances. The author discusses in detail the method of application of the forceps and concludes that these forceps can be recommended for all operative deliveries. Provided that sufficient preliminary instruction be undertaken in the use of the forceps, he considers that they can be used not only by the specialist, but also by the general practitioner.

Obstetrical Analgesia.

E. Vogt (*Monatsschrift für Geburtshülfe und Gynäkologie*, October, 1928) considers that after experience with sixty deliveries "Pernocton" is the best drug for inducing obstetrical anæsthesia. It is a 10% solution of a derivative of veronal. It is administered intravenously and has an instantaneous effect. The dosage is one cubic centimetre per 12·5 kilograms of body weight with an average dose of four to six cubic centimetres. The injection should be given slowly and should take about two minutes, otherwise reactions may be noted. In *primiparæ* the *os* should be at least one quarter dilated, while in *multiparæ* it should admit two fingers. There is no period of excitation, the uterine contractions are absolutely unaltered and no influence on the child nor excessive length of the third stage has been noted. In a few instances there has been some vomiting immediately after the injection for reasons unknown and it can be prevented by the preliminary injection of one milligramme of atropine. Occasionally a few drops of ether or ethyl chloride are required when the head is being born if the dosage and time of injection are incorrect. The author is enthusiastic regarding the rapid onset of anæsthesia with no ill effects on mother and child with this drug as compared with other drugs.

Duration of Pregnancy.

H. Füth (*Monatsschrift für Geburtshülfe und Gynäkologie*, November, 1928) has investigated the duration of pregnancy with special reference to postmaturity and considers that this possibility can be estimated by noting exactly when morning sickness first began. If a normally developed child be born after a protracted pregnancy, he considers that this is due to delayed development of the ovum caused by slowness in its becoming embedded in the uterine wall. After careful investigation of forty-two patients he describes three types: those in whom morning sickness was noted within four weeks of the first day of the last period (21%), those in whom the interval was under two months, the majority occurring at the fifth to sixth week (69%) and those in whom the interval was over two months (9·5%). The earliest time of implantation of the ovum appears to be twenty-two days after menstruation. In the classical specimens of Bryce-Teacher and Spee nidation occurred thirty-eight to forty days after the last period. As morning sickness depends on the embedding of the ovum, if this occurs later than usual, a prolongation of pregnancy can be expected.

Intracranial Birth Lesions.

H. Naujoki (*Monatsschrift für Geburtshülfe und Gynäkologie*, November, 1928) has summarized the available literature on the life history of infants who suffered from an intracranial birth lesion. The diagnosis of the condition at birth can usually be made with moderate accuracy. He disagrees with some observers that blood in the cerebro-spinal fluid is essential for a positive diagnosis and considers that it is only one of several factors. Lumbar puncture is often a very valuable method of treatment, but little success can be expected to follow repeated punctures. Provided that the infant recovers from the initial lesion, a proportion dies in the succeeding months or years from fits which are directly due to the birth trauma. Others succumb to diseases which have little to do with the primary injury. A certain number recovers completely and their future development both physical and mental is in no wise impaired. The author has observed nine patients for periods varying from two to twenty years. In two instances following on difficult forceps delivery definite disturbance in the development of speech was noted.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held in the Medical Society Hall, East Melbourne on July 4, 1928, DR. J. NEWMAN MORRIS, the President, in the chair.

Unveiling of Bust of Dr. W. R. Boyd.

Proceedings were opened by the unveiling of a bust of Dr. W. R. Boyd, by Mr. Paul Montford, presented to the Branch by Mr. P. Bellew.

The Diagnosis of Lung Conditions.

DR. KENNETH CROSS read a paper entitled: "The Radiological Examination of the Thorax" (see page 483).

DR. A. R. HAYWOOD pointed out that the films shown of lung conditions chiefly illustrated new growth, hydatid and tuberculous affections. Another type of infection which he had seen, was that by the *Aspergillus fumigatus* which in one species caused an ulcer in the tropics and was usually thought to be saprophytic. It was, however, proved to be parasitic in rabbits and resembled the tubercle bacillus for which it was frequently mistaken. Dr. Haywood thought that the possibility of infection with this fungus should be considered in the differential diagnosis of lung conditions.

DR. J. F. MACKEDDIE said that the demonstration had opened up avenues of investigation unknown to some of those present. It was a question how much radiology really helped in the diagnosis of early lung lesions. Sometimes the stethoscope was more successful than radiology and *vice versa*.

The ring appearances which might be thought to be indicative of cavities, were sometimes due to the remains of old localized pneumothorax conditions and were really pleural appearances.

Dr. Mackeddie expressed his high appreciation of Dr. Cross's work and of his demonstration.

DR. FRANK TRINCA said that he had been using a special method of percussion for some years. Instead of varying the striking force of the plexor finger, as in the usual method, he varied the pressure of the pleximeter finger. He experimented by this method in estimating the grades of resonance in the lung and was not only able to estimate mechanical resonance, but had found that the resonance was impaired in people suffering from neurasthenia. By suitable treatment in the absence of organic lung disease the resonance could be restored to its normal condition.

Referring to Dr. Cross's description of effusion round tuberculous lesions, Dr. Trinca said that he considered such shadows were due to increased calcium deposition and indicated a reparative tendency rather than inflammatory effusion.

A patient at the Alfred Hospital, who had been adversely reported on by the radiologist on account of shadows present in the lungs, after an interval of three months' treatment had continued to improve and Dr. Trinca considered that the shadows had been caused by the deposition of calcium which had been administered in large doses.

DR. W. OSTERMEYER asked why the lateral method had been so long delayed in coming into use and commented on the fact that the shadows of the ribs were less definite in the lateral than in the antero-posterior views.

DR. S. V. SEWELL expressed appreciation of the paper and regretted that the lateral method had not been evolved long before. It would have obviated many mistakes. Dr. Sewell cited one example of hydatid disease in the posterior mediastinum which in the skiagram had been hidden by the heart shadow. He quoted other cases in which clinical and X ray diagnoses had been at fault. One such patient was a girl who came from the country. Three members of her family had died of rapidly spreading pulmonary tuberculosis. On clinical and X ray examination this girl had manifested signs suggestive of a tuberculous lesion in the right interscapular region. The antero-posterior film had revealed a mass of infiltration and a doubtful cavity. There were no tubercle bacilli found in the sputum. A lateral X ray film had shown that the lesion was a hydatid cyst. It had been successfully operated on and recovery had followed.

DR. DOUGLAS THOMAS emphasized the fact that it was necessary to use every available means in the elucidation of pulmonary diagnostic problems. Careful screen examination was an important preliminary to estimate lung and diaphragmatic movements and it was sometimes desirable to take X ray films of the patient lying on the right and the left side. It was thus sometimes possible to demonstrate two fluid levels, as in cases of abscess or pyopneumothorax.

Dr. Thomas also expressed the opinion that many cases of streptothryx infection were not diagnosed owing to insufficiently careful examination.

DR. H. D. STEPHENS said that mistakes were sometimes made by even the most expert radiologists. He had seen a child, aged nine years, with clinical signs suggesting extensive tuberculous involvement of the left lung. The child had come from the country and had had hæmoptysis. It was also stated that tubercle bacilli had been found in the sputum, but these organisms had not been found on subsequent examination. The hydatid complement fixation test had yielded no reaction and the X ray report had been one of undoubted tuberculosis. This diagnosis had been against Dr. Stephens's clinical impression, as the patient's general condition was good. The patient had gone back to the country and three days later had had a further hæmoptysis, had coughed up a hydatid cyst and nearly died.

DR. J. NEWMAN MORRIS conveyed the thanks of the Branch to Dr. Cross.

Dr. Cross in reply thanked the meeting for its generous reception of his attempt to advance the examination of the lungs another step forward.

In reply to Dr. Trinca, Dr. Cross reaffirmed the probability of the fluffiness of the discrete shadows in non-confluent tuberculous lesions being due to pulmonary exudate, the shadows of the lesions becoming smaller and much sharper or perhaps even disappearing altogether with the subsidence of the inflammatory reaction. Calcium shadows were much denser.

In reply to Dr. Ostermeyer, Dr. Cross explained that the ribs showed up less in the lateral view than in the postero-anterior, mainly because a more penetrating ray was used in the former.

He had not come across a case such as Dr. Sewell described.

Dr. Thomas was assured that a careful preliminary fluoroscopic examination was always carried out, but that postero-anterior and lateral films were necessary for detailed examination and as a permanent record.

In regard to the discrepancies between the clinical and radiological diagnoses in several of the cases demonstrated, Dr. Cross reminded Dr. Douglas Stephens that these had been mentioned in the purest scientific spirit, that he frankly recognized that radiologists had their limitations, but did not think that they should be considered the only persons in whom humility was to be regarded as a virtue.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at Saint Vincent's Hospital on October 11, 1928. The meeting took the form of a series of clinical demonstrations.

Congenital Heart Disease.

DR. J. E. SHERWOOD showed a child, aged two years and three months, who was suffering from congenital heart disease. The child was an adopted child and the guardian had brought it to hospital on account of its bad colour and because it was always grizzling.

On examination the cheeks were seen to be cyanosed, the fingers and toes were cyanosed and clubbing was present. A definite systolic thrill was present all over the præcordium and a systolic murmur was heard loudest over the pulmonary area and to the left of the sternum. An X ray examination had been made and some general

increase of the cardiac shadow reported. No reaction had occurred to the Wassermann test. The erythrocytes had numbered 4,000,000 per cubic millimetre, the hæmoglobin value had been 80% and the colour index 1·0. The leucocytes had numbered 8,000 per cubic millimetre. The erythrocytes had manifested slight deformity in size and shape. The staining reactions had been normal. No nucleated red cells had been found. The leucocytes had been present in normal proportions. Dr. Sherwood thought that the cardiac lesion was probably pulmonary stenosis.

Microcephaly.

Dr. Sherwood also showed a child, aged three years, who was suffering from microcephaly. The child was one of twins. The twin sister appeared normal. The patient had commenced to sit up only two months previously and had been able to stand with help for the same time. She was still unable to grip things and was quite unable to speak. She had been backward in all respects save teething. She had cut her first tooth at four months.

On examination the child's forehead appeared small and the ears perhaps comparatively large. The occipitofrontal circumference of the head was just over 42·5 centimetres (seventeen inches). The palate was abnormally arched. The reflexes appeared normal. The control of the bladder and rectum was normal and there had been no convulsions. The serum had not reacted to the Wassermann test. The honorary ophthalmic surgeon had reported that the right optic disc was not developed and that the left disc appeared normal and the fundus normal. He thought that the child saw with the left eye and had peripheral vision with the right eye. Central vision in the right eye was probably not clear like that of the left.

Paget's Disease Complicated by Syphilis.

Dr. Sherwood's third patient was a male, aged sixty-four years. As was usual with patients suffering from Paget's disease, a satisfactory history was unobtainable. A history was all the more difficult to obtain on account of the extreme deafness of the patient. He appeared to date the commencement of his trouble from a fall which he had experienced twelve months previously. Since then he had been practically bedridden. He complained of a constant pain, boring in character, situated in the region of the lumbar spine. Progressive deafness and blindness, bilateral in each case, had recently been making life a burden to him. Intellectually he was very active and at times displayed a very keen wit.

On examination the head appeared considerably enlarged. There was definite hypertrophy of the supraorbital portions of the frontal bones and the zygomatic bones seemed evident. The head "looked too large for the body, the neck was short and the head seemed to rest directly on the shoulders." The trunk appeared small and the thorax rigid. There was bowing of the forearms and lower limbs. The costal border of the thorax was approximated to the crests of the ilia. The pelvis was broad and massive with abundant flaring of the iliac crests. The bowing of the legs was quite pronounced. Definite arteriosclerosis was readily observable. Œdema was present in both legs.

The serum had been submitted to the Wassermann test and a "++" result had been obtained. X ray examination had revealed the changes typical of Paget's disease.

Pericarditis.

Dr. Sherwood also showed a girl, aged fifteen and a half years, who had complained for years of cough and shortness of breath. Her feet had commenced to swell three weeks previously. Five years previously she had suffered from a "rheumatic heart" and had been in and out of hospital on seven occasions since.

On examination the patient was in a condition of orthopnœa, the cheeks were slightly flushed. The cardiac apex beat was situated in the seventh intercostal space 6·25 centimetres (two and a half inches) outside the nipple line. It was heaving in character and visible over a considerable area. There was a corresponding dulness to percussion; this dulness extended to the right side of the sternum and varied from 1·25 centimetres (half an inch) in the upper right intercostal space to five centimetres (two inches) in the lowest right intercostal space. Œdema of the bases of both lungs was present. There were also definite ascites and slight œdema of the legs. The liver was palpable five centimetres (two inches) below the costal margin. Dr. Bede Harrison had made an X ray examination and had reported extreme general dilatation of the heart. The shape had suggested pericardial effusion. The right lung had manifested definite congestion and slight exudation at the middle third of its inner half.

Pituitary Disorder.

Dr. Sherwood's last patient was suffering from a pituitary disorder due to a tumour in the region of the pituitary gland. The patient complained of weakness and giddiness of six months' duration. He had had repeated attacks of malaria during the previous ten years. The Wassermann test had been applied to the serum, but no reaction had been obtained. The basal metabolic rate was −18. X ray examination had revealed complete destruction of the *sella turcica* and irregular suprasellar calcification was present. The appearances strongly suggested a suprasellar tumour. The hydatid precipitation test had yielded no reaction. No ova or parasites had been detected in the fæces. Dr. Sherwood drew attention to several points of interest. The patient had an extremely dry skin and though he was forty-six years of age, the external genitals had the appearance of those of a boy of fourteen or fifteen. He proposed to treat the patient with pituitary and thyreoid extract in increasing doses.

Diathermy.

Dr. V. M. Coppleson gave a demonstration of the results of diathermy treatment in carcinoma of the scalp and in extensive rodent ulcer of the face and lip.

Cerebral Tumour.

Dr. J. T. Tansey and Dr. V. M. Coppleson showed a male patient, aged twenty-three years, who had been admitted on July 24, 1928, complaining of severe headache of one month's duration. One brother of the patient suffered from Jacksonian epilepsy. The patient's headaches commenced in the frontal region and extended backwards to the occipital region. He had vomited with the headache on two occasions. During the previous eighteen months he had had four fits and on these occasions he had struggled and bitten his tongue. He also had some trembling of the left hand.

On examination his speech had been slow and deliberate. Definite intention tremor had been present in the left arm and hand, but not on the right side. The left arm and hand had been definitely weak. The triceps jerk on the left side had been slightly exaggerated. There had been no subjective symptoms and no disturbance of sensation could be discovered. There had been no nystagmus and the pupils had reacted to both light and accommodation. The knee jerks had been slightly exaggerated. The sense of passive position and movement had been normal. Slight left sided facial paresis had been present.

On August 2, 1928, the pupils had been slightly dilated, the left larger than the right.

On August 6, 1928, the patient had had an epileptiform convulsion and this had been preceded by flashes of light.

On August 9, 1928, the patient had complained of severe headache in the right frontal region, extending back to the right occipital region. Morphine alone had given relief.

The patient had complained of severe headache on August 10 and 12 and on the latter date he had had another fit.

The ocular fundi had been examined by Dr. Guy Pockley and he had found papillœdema in both discs. The swelling on the right side had been 2·5 diopters and on the left 3·5 diopters. No reaction had been obtained to the Wassermann test. X ray examination had revealed separation of the sutures of the cranial bones, suggestive of increased intracranial tension. Examination of the visual fields had revealed a diminution of fields of a left superior homonymous hemianopia of quadrant type.

On August 13, 1928, operation had been performed. A left sided subtemporal decompression had been performed. The brain had been normal in appearance. A large right sided subtemporal decompression had then been performed. There had been definite bulging of the brain which herniated through the *dura mater* as it was divided. The convolutions in the region of the right inferior frontal convolution (posterior end) had been extremely flattened and abnormal. A cyst had burst in this region, about thirty cubic centimetres (one fluid ounce) of clear yellowish fluid being extruded. Following operation the patient had made an uninterrupted recovery, except that for the first ten days after operation he had had considerable difficulty in swallowing liquid food and then solid food. A cerebrospinal fistula had been present in the right side for several weeks.

Since the operation the patient had had no fits, the intention tremor of the left arm had definitely improved, he could hold a glass of water in the left hand and he had had no further headaches.

Malignant Disease of the Orbit.

DR. V. M. COPPLESON and DR. GUY POCKLEY showed a male patient who had noticed in 1920 a small lump on the left side of the nose near the eye. This lump had gradually become larger. He had been treated with radium and X rays, but the growth had progressed in spite of this and in December, 1926, the orbit had been exenterated by Dr. Pockley. It had been found at operation that the growth could not be completely removed on the nasal side and the patient had been referred for diathermy. Diathermy had been applied on several occasions and on one occasion the lower wall of the orbit had been removed. The whole area had remained clear for some months since the last application, with the exception of one small suspicious area.

Ophthalmic Conditions.

DR. GUY POCKLEY and other honorary ophthalmic surgeons showed patients who were suffering from interesting ophthalmic conditions. Among these were a patient with an aneurysm of the internal carotid artery and the cavernous sinus, a patient with a pituitary tumour and several with pathological conditions of the fundus.

Mobilization of Joints.

In order to demonstrate the value of early active movement after operations designed to mobilize joints, DR. D. J. GLISSAN showed a male patient, aged forty-three years, who had first been seen on August 26, 1927, complaining of tingling in the fingers, particularly the fifth of the right hand and of stiffness in the right shoulder joint. These symptoms had supervened upon a fall on the right shoulder some two months previously.

Examination had revealed an unreduced dislocation of the right shoulder and X rays had revealed in addition a separation by fracture of the outer tuberosity of the head of the humerus. Operation had been undertaken on September 20, 1927, when the head of the humerus had been excised and the separated muscle insertions sutured as close to their anatomical sites as possible after reposition of the stump into the glenoid cavity. The upper limb had been secured in the position of right-angled abduction and external rotation at the shoulder joint by a plaster spica. On October 10, 1927, the plaster had been removed from the upper surface of the spica from shoulder to hand and the patient had been encouraged and assisted to carry out movements at all joints within the range allowed by the plaster. On October 28, 1927, the plaster had been split so as to allow of its daily removal and increased movements. On October 30, 1927, it had been finally removed and the patient reeducated in all movements. On November 11, 1927, he had been discharged from hospital to attend as an out-patient for a further two months.

When shown at the meeting he could abduct the limb freely and without effort at a right angle at the shoulder joint itself. He could place his hand on the back of his head and into the right hand trouser pocket with ease. He could with more effort place his hand behind his back. All these movements were painless and he had no tingling in the fingers and his grip was strong.

At the present time and for the eight months preceding the meeting he had been back at his former occupation as a ladies' hairdresser. For the last six months he had been doing full ordinary duty at this trade.

Fracture of the Olecranon.

Dr. Glissan's second patient was a married woman who had sustained a direct injury to the right olecranon process on March 16, 1928, resulting in a fracture of the process. Any immediate treatment of the fracture had been rendered difficult by the presence of an abraded area over the posterior aspect of the elbow region.

On April 16, 1928, Dr. Edye, under whose care she was at this time, had wired the olecranon. There had been a good deal of shortening of the triceps and following the operation the elbow had necessarily been kept in extension to avoid overtension on the wire and bones. Some few weeks following operation the patient had fallen again and refractured the process. She had elected to leave the joint as it was for some time and had been chiefly worried by the ends of the wire projecting beneath the skin. Dr. Edye had then asked Dr. Glissan to take the patient over, as he was resigning his appointment at Saint Vincent's to join the full staff at the Royal Prince Alfred Hospital. Radiograms at this time had revealed the olecranon much retracted and casting a very faint shadow. The wire was seen to have been fractured at two sites.

Operation had been undertaken on July 24, 1928. After the space between the fractured ends of bone had been cleared and the wire removed, the olecranon had been freed and cleared of a fibrinous layer of material lying on its articular surface. The cartilage had apparently been quite healthy and intact. The olecranon had been sclerosed, particularly over the fracture surface. A bone pin had been fashioned from the posterior border of the proximal end of the ulna and after being placed in position and the necessary hole drilled, the olecranon had been pinned securely to its old site. The triceps had been sutured at the tip and sides and the wound closed. Active movements had been instituted early.

The patient had good union at the site of fracture and almost the full range of passive movement. No attempt had been made at the time of operation to lengthen the triceps, as the primary necessity was to obtain union after reposition of the olecranon. The patient had useful, though much diminished power of extension and if this did not improve, a further operation to lengthen the muscle and insert it once more about the base of the olecranon would be necessary.

Lesion of Median and Ulnar Nerves.

Dr. Glissan's third patient was shown in order to demonstrate (i) the methods of splinting the hand in the treatment of lesions of the median and ulnar nerves, (ii) the lack of any necessity to use electrical stimulation in the treatment of such lesions and (iii) the results following splinting and reeducation.

A man, aged twenty years, had been injured in December, 1927, in a motor accident and had sustained amongst other lesions a transverse wound of the right wrist region on its anterior aspect. There had been extensive division of the tendons and both median and ulnar trunks had been divided. The tendons had been sutured, but nothing had been done in the case of the nerves. When the patient was seen by Dr. Glissan in February, 1928, all the tendons had healed, but the hand had presented the typical picture of a complete median and ulnar palsy. The little finger had not lost sensation and at operation it was found that the line of division of the ulnar nerve was just distal to the point whence the dorsal branch arose.

Operation had been carried out on February 27, 1928. Both nerves had been found completely divided and had been sutured with fine catgut. It had been comparatively easy to deal with the median, but the ulnar had been divided at a lower level and the distal portion had been difficult to section down to unscarred nerve bundles. Following operation the forearm had been placed on an

aluminium splint made by Dr. Glissan, moulded to the shape of the limb and so designed as to hold the wrist acutely flexed, the fingers had been flexed at the metacarpo-phalangeal joints and extended at the interphalangeal joints. The thumb had been held by a suitable strip of adhesive strapping and a bandage in the position of adduction opposition and flexed at the metacarpo-phalangeal joint. This position had been maintained until March 3, when the moulded splint had been extended a little at the wrist and this had been further altered from time to time until April 24, when he had been allowed to begin active movements of extension at the wrist joint and reeducation had been commenced.

At the time of the meeting the patient had return of power to a well marked degree in all affected muscles. He had full control of all thumb movements. There was still anæsthesia of the distal halves of the thumb and fingers, with the exception of the little finger. Sensation was returning definitely, but much less slowly than muscular power. Following the removal of the original splint, the patient had been fitted with a light aluminium splint, the posture of the fingers had been similar to that adopted after operation and the thumb had also been placed in the usual position. He had taken off all splints some eight weeks before the meeting and was using his hand to carry out light movements.

In view of the gravity of a lesion to the nerves at this level the result was a gratifying one. Fortunately it had been possible to undertake operation before fibrosis of the lumbricals, interossei and thumb intrinsics had set in. At no time had any electrical stimulation or massage been carried out.

Partial Gastrectomy.

DR. W. MAXWELL showed a male patient, aged fifty years, a navvy, who had been admitted on August 27, 1928, complaining of pain in the upper part of the abdomen for six months. This had commenced as a discomfort and had become a pain, occurring constantly two hours after meals. No pain had occurred at night. Recently the pain had become continuous and medical treatment at the outdoor department had given him no great relief. He had vomited at times during the illness, but not recently.

An X ray report on August 6, 1928, had been to the effect that there was a large perforating ulcer on the lesser curvature, fixed, probably by adhesions, to neighbouring organs.

Operation had been undertaken in preference to medical treatment, as the ulcer was chronic and of the penetrating type and as the patient's occupation and mode of life would render prolonged dieting and alkaline treatment impossible. The ulcer had proved to be high up on the posterior wall of the stomach and firmly adherent to the posterior abdominal wall.

As regards the type of operation to be done, gastro-enterostomy had offered a state of permanent alkalinization as the stomach was not of the rapidly emptying type, but it had held the same disadvantages as medical treatment as far as subsequent dieting was concerned and there had also been the possibility of malignant disease. A stoma would have been distal to the ulcer, a disadvantage according to Sherren, but held by Moynihan not to matter. Local excision and gastro-enterostomy, also sleeve resection and gastro-enterostomy had appeared unsafe, as the site of the ulcer was not accessible except by traction on the pylorus and by turning the stomach over, so suturing would have been done under conditions of tension and would have disturbed the part of the wall in which it would be desirable to make the stoma. Partial gastrectomy had been safer, as the sutures could be placed more securely, the time taken would be less and handling reduced to a minimum.

The ulcer had been dissected of the parieties behind the duodenum being divided immediately beyond the sphincter and the distal end closed. After the omenta had been cut from the curvatures up to a point well above the ulcer, the free lower part of the stomach had been used as a retractor and turned up to the left over the costal margin. The jejunum had been brought up to the site of the anastomosis above the ulcer and the first row of posterior sutures introduced. The jejunum had next been opened, the posterior wall of the stomach cut, the front wall still serving as a retractor and the remaining row of posterior sutures inserted. As the anterior wall of the stomach had been divided piece by piece, this latter deep row of sutures had been continued in front and when completed had been covered by the first row being continued anteriorly. The anastomosis was of the Pólya-Balfour type with a loop thirty centimetres (twelve inches) long brought up in front of the transverse colon.

Pathological examination of the ulcer had revealed no evidence of malignant disease. The convalescence had been smooth and the immediate result satisfactory. It was now six weeks only since the operation and the patient could eat all usual foods, he took about three-quarters of his normal meal and had no symptoms.

Dr. Maxwell said that as regards the ultimate results of partial gastrectomy, Lake had recently published the results of a series of sixty-five operations done over a period of six years. Of the patients 95% had had no subsequent symptoms and took all foods without restriction. There had been complete absence of free hydrochloric acid in all but one and this was a permanent result to date. The average total acids averaged less than 10, total chlorides in the absence of bile 29, with bile over 70. X rays revealed the stump increased in size and bowel movements normal. No patient had less than 4,800,000 erythrocytes per cubic millimetre. There had been no case of jejunal ulcer or of any prodromal symptoms. Lake supposed that the good results were due to the lessened free acid which in its turn was not due to a more effective neutralization, as after partial gastrectomy the total chlorides in the absence of bile were always low, but resulted from the removal of the acid secreting part of the stomach. Contrary to this view, work recently published from Devine's clinic accorded more with the usual physiological teaching, but went farther and suggested that more free acid was secreted by the cardia than by the pylorus. In the latter case subtotal gastrectomy would abolish free acid by interference with innervation or in some other way not explained. As Lake pointed out, sleeve resection interfered with innervation, but did not result in absence of free acid.

Fibrocystic Disease.

Dr. Maxwell's second patient was a woman, aged thirty-seven years, who had been admitted on September 26, 1927, complaining of swelling of the right foot for four months. On examination there had been slight local swelling over the proximal part of the second metatarsal, hard, but not tender. The overlying skin had been slightly discoloured. The radiologist had reported that the appearance strongly suggested an osteosarcoma of the second metatarsal. The Wassermann test had yielded no reaction.

At operation the second toe and metatarsal had been removed as one piece, the soft parts being divided well clear of the latter.

The pathological report had been that the bone was of normal dimensions surrounded by fatty and muscular tissue. On section it had a necrotic appearance with small cystic spaces. Microscopically there was activity of the osteoclasts and numerous spaces in the bone tissue in which a few large cells were present. There was also increased fibrosis. There had been no evidence of inflammation or of malignant disease. The appearance was like early fibrocystic disease.

This condition had appeared malignant and had suggested the necessity for amputation. The patient had fortunately elected to accept the risk of conservative treatment. Dr. Edye had kindly seen the patient and had agreed that local excision was the wiser procedure. The functional result was good, the loss of the metatarsal not interfering in any way with walking. The case was an illustration of the justification of conservative treatment of bone tumours apparently sarcomatous.

Rupture of Spleen.

Dr. Maxwell's third patient was a male, aged twenty-seven, who had been admitted on July 15, 1928, shortly

after being knocked down by a motor car. He had been conscious and badly shocked. Some abrasions of the head had been present, an abrasion had been found over the ninth and tenth ribs in the posterior axillary line. Rigidity of the muscles of the left side of the abdomen had been most pronounced in the upper part. Tenderness had been present in the left renal area in front and over the ribs at the site of the abrasion. Dulness had been present in the left loin. There had been abrasions of the right leg.

The patient had recovered from the shock in an hour and had been taken to the theatre. On opening the abdomen much blood had been found and a large laceration palpated in the spleen medial to the notch. The spleen had been delivered at the wound after separation of dense adhesions to the diaphragm. The laceration had extended into the hilus and almost through the whole thickness of the organ and free bleeding had occurred. Splenectomy had been done, part of the blood removed from the abdomen and a drain put down to the tail of the pancreas and brought out in the left loin. Convalescence had been normal.

Rupture of the Kidney.

Dr. Maxwell showed a male, aged twenty-five, who had been admitted on September 30, 1928. He had been seen at 9 p.m. and had given a history of having fallen on his side on a low concrete wall twelve hours previously. He had consulted a doctor and had gone home to bed having some pain in the right loin; during the afternoon he had noticed blood in his urine and had come to hospital. On examination there had been tenderness over the right renal area and resistance of the muscles of the right loin. The abdomen had been soft, pain slight and the pulse rate 102. The urine had contained much bright red blood.

The kidney had been exposed by the usual lumbar incision, as the abdomen apparently was not involved. There had been an effusion of blood around the kidney and an irregular laceration across the convexity and posterior surface extending into the hilus, where there was a large vessel spurting. Suturing had been out of the question and the kidney had been removed. No injury to the peritoneum had been detected. A drain had been left in for twenty-four hours. Convalescence had been smooth.

Dr. Maxwell said that this case and the preceding one were interesting as examples of rupture of solid viscera by direct violence. The fixation of the spleen to the diaphragm might have rendered it more vulnerable by lessening its mobility. The bleeding from the kidney was slow, the symptoms slight and profuse hæmaturia the most reliable guide to the extent of the damage. Slight hæmaturia might be the result of contusion of the kidney without rupture, as was observed in the case of a patient at present in hospital and who had not been opened. The urine should always be examined early in abdominal injuries and if necessary a catheter passed to obtain the specimen.

Muscle resistance bordering on absolute rigidity did not necessarily imply rupture of a viscus, as it occurred with simple contusion of viscera or peritoneum.

Adeno-Carcinoma of the Rectum.

Dr. Maxwell's next patient was a male, aged seventeen years, who had been admitted on October 18, 1926, complaining of "bleeding piles" for three weeks. On examination no external piles had been visible and none had been palpated in the anal canal. In the upper part of the ampulla two masses had been felt, one, the larger, the size of a half crown and projecting 1·25 centimetres (half an inch) into the lumen anteriorly, the smaller about half this size being to the left and below. Both had been of a firm, elastic consistency and had not been ulcerated. A provisional diagnosis of adenoma had been made. Sir Alexander MacCormick had suggested local excision and microscopical examination.

At operation on October 20, 1926, both masses had been removed *per rectum*, each shelling easily from the muscular coat, but having no plane of demarcation from the mucosa.

The pathological report had been as follows:

> Material submitted consists of portion of wall of rectum. The mucous membrane for the most part is normal, but in one or two places has grown through the *muscularis mucosæ* and is proliferating in an abnormal manner. These areas of abnormal gland elements are undergoing colloid degeneration. The tumour is an adeno-carcinoma with colloid degeneration, but as far as the material examined is concerned does not suggest a high degree of malignancy or of infiltrating power.

The patient had been kept under observation for two months and had had several free hæmorrhages. There had been an ulcer at the site of excision of the larger mass. Sir Alexander MacCormick had again seen the patient and had advised abdomino-perineal resection, which Dr. Maxwell had carried out on December 22, 1928. A pathological report had again been furnished by Dr. Little after submitting the material to Professor Welsh. There had been no evidence of growth round the ulcer. The glands examined showed inflammatory changes.

Dr. Maxwell said that the case was interesting from the age of the patient and the type of tumour which was apparently on the border line between adenoma and adeno-carcinoma. Lockhart Mummery regarded adenomata of the rectum as a precancerous condition which sooner or later underwent malignant change. Thomson and Miles in their text book quoted the case of a child twelve years of age and Lockhart Mummery had observed one at fifteen years. Other cases were recorded of carcinoma occurring in the rectum and also in the colon in children.

Dr. Maxwell expressed his indebtedness to Sir Alexander MacCormick for his suggestions as to the clinical conduct of the case and to Dr. M. Little for the pathological reports.

Secondary Melanomata of the Small Intestine with Chronic Intestinal Obstruction and Intussusception.

Dr. Maxwell also showed a patient who had suffered from secondary melanomata of the small intestine with chronic intestinal obstruction and intussusception. This report was published in our issue of November 24, 1928.

Skiagrams.

A demonstration of interesting skiagrams was given by Dr. B. J. Harrison and Dr. B. P. Anderson Stuart.

NOMINATIONS AND ELECTIONS.

The undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

Gourlay, Gwladys Dalrymple, M.B., Ch.M., 1925 (Univ. Sydney), 1, Highfield Road, Lindfield.

Hawker, John Kenrick Alva, M.B., 1928 (Univ. Sydney), 10, Price Street, Orange.

Matthews, Henry Dilahunt, M.B., 1908 (Univ. Sydney), Mallusk, Hilltop Crescent, Manly.

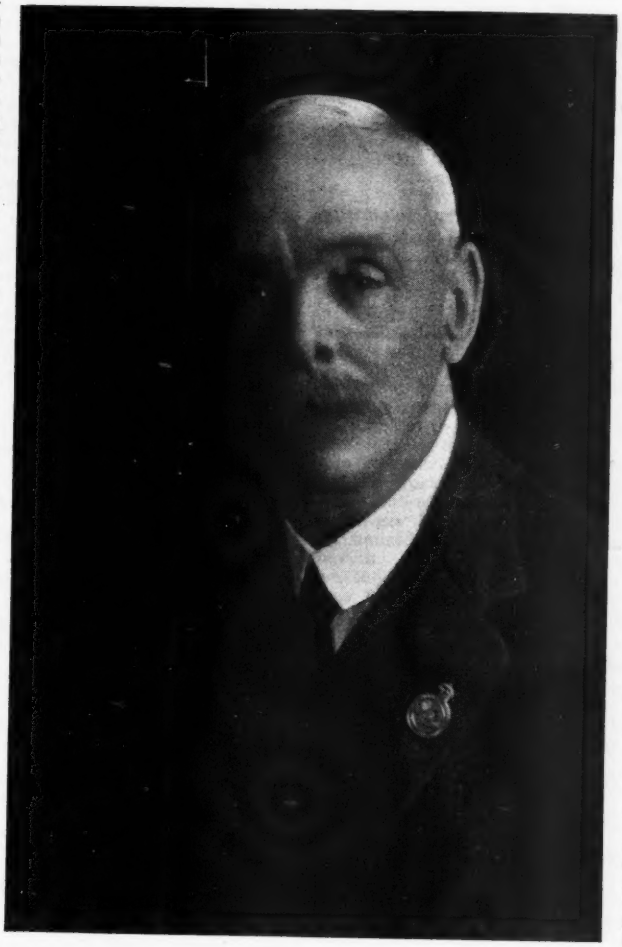
Windeyer, Brian Wellington, M.B., B.S., 1927 (Univ. Sydney), c.o. R. Windeyer, Esq., K.C., 182, Phillip Street, Sydney.

Obituary.

BERNARD JAMES NEWMARCH.

Charles Dickens had just begun to write a new book at Gadshill which he determined to call "The Tale of Two Cities," when an infant was born in Peckham Rye, on the south side of the River Thames, not far from some of the early haunts of the great author. The father of the child was a barrister, one John Newmarch, who had married Mary Elizabeth Leathes. That was in April of 1856. The boy grew up under the tender care of a loving mother and the watchful eye of a strict but affectionate

father. In due course Bernard James Newmarch was sent to school to Highgate, to the Edward Cholmondeley School. The schools for the sons of gentlefolk in those days had become improved as a result of the kindly but severe exposition of Charles Dickens. Of the conditions at this preliminary school we know nothing, but it is certain that his parents kept in close touch with the establishment and with their son and satisfied themselves that the influence was a healthy one. After a time he was removed to King's School at Bruton. Here he displayed his eagerness to learn and his ability to play and at this epoch a remarkable manliness of character manifested itself. Later he was placed at the King's School at Sherborne where his unusual qualities developed apace. He became the favourite of the boys and the pride of his masters. By the time he was sixteen years of age he was head of the school, had gained laurels on the playgrounds, especially at football, and had established himself as a boy who would make his mark in the world. When seventeen years of age he entered King's College, attached to the University of London. At that time and for many years later the university was little more than an examining body. Its students sought their education in colleges and hospitals loosely connected with the organization. Bernard James Newmarch entered the School of Medicine at King's and again he rose to the top. He worked hard and well and gained distinction. He played with vigour and as a true sportsman and attained many coveted positions. As at school he excelled particularly on the football field. While a student he played for his hospital and in his final year he was selected as reserve man in the English (international) fifteen. In 1877, when he was twenty-one years of age, he passed his examination for the diploma of member of the Royal College of Surgeons of England. After qualification he secured the position of house surgeon at King's College Hospital, then in Lincoln's Inn Fields. Later he became Sambroke surgical registrar. These appointments served to widen his knowledge and broaden his outlook, but he was determined to add to his accomplishments in the field of medicine. He sought and obtained the position successively of clinical assistant at the Royal Ophthalmic Hospital, the Hospital for Sick Children in Great Ormond Street and the South London Ophthalmic Hospital. In 1880 he was admitted a licentiate of the Royal College of Physicians of London. In those days women had not established their right to share on equal terms with men in the profession of medicine. The triangle had been established, but the women students were few in number and chiefly those who were pioneers. The triangle had at its three extremities the Royal Free Hospital in Gray's Inn Road, the London School of Medicine for Women in Hunter Street, Brunswick Square, and the Women's Hospital, Euston Road. Newmarch was given the opportunity of developing the movement as Medical Superintendent of the Royal Free Hospital. At the end of 1882 he made up his mind to move to Australia and on his arrival in New South Wales he followed the late Thomas Fiaschi in his practice at Windsor. His knowledge of medicine, his kindly disposition and his ability to get on with his fellow men combined to make this endeavour a success from the first. A few years later he moved to Bowral where he soon obtained a large practice. In 1901 he wended his way towards the centre of affairs. For eight years he practised in North Sydney and then he was appointed an honorary surgeon at the North Shore Hospital. In due course he relinquished his suburban practice and from the time he had his rooms in Macquarie Street he became more and more a pure surgeon. He gained a position on the honorary surgical staff of the Sydney Hospital and a little later he was chosen to be one of the surgical tutors. At the outbreak of the South African War he joined the Naval Brigade and later he served in the Australian Army Medical Corps with distinction. He was mentioned in dispatches and gained the Queen's Medal with four clasps. His attainments in the war and the value of his services on the field brought him again prominently before the authorities and his profession. His first commission in His Majesty's Forces is dated June 26, 1896. On his return to Australia he continued to gain in eminence as a surgeon and as a teacher and in popularity among his contemporaries. In 1902 he was elected a member of the Council of the New South Wales Branch of the British Medical Association and in 1907-1908 he served a year's term of office as President of the Branch. At the close of the period he again visited Europe and his address on relinquishing the chair was read for him by Dr. R. H. Todd, the Honorary Secretary. He discoursed on the causes of the deterioration of the tangible results of medical practice. He looked askance at the overfilling of the ranks of the profession; he challenged the authorities for allowing public hospitals to be used for a purpose other than the relief of the medical and surgical care of the indigent. He brought statistical evidence to prove that these charitable institutions were being abused and that the proportion of the community obtaining its medical attendance through the agency of the friendly societies was becoming alarmingly great.



During his visit to the old country he sat for the examination of the fellowship of the Royal College of Surgeons of Ireland and obtained the diploma.

In 1904 his name appeared in the unattached list of the Australian Army Medical Corps with the rank of captain and at the end of 1907 he attained his majority. In 1912 he was promoted to the rank of Lieutenant-Colonel and

at the outbreak of war he was placed in command of the First Field Ambulance in the Australian Imperial Force. The prominent part that he took in the war is still fresh in the memory of every Australian. His service constituted a long series of large achievements. Between 1915 and 1917 he commanded the Number One and Number Three Australian General Hospitals, was mentioned in dispatches and was created a Commander of the Order of Saint Michael and Saint George. In 1917 he was promoted to the rank of Colonel and he became Consulting Surgeon at Headquarters in London. Throughout his military experience he tempered justice, rectitude and discipline with humanity and kindness. He had few if any enemies and those subjected to his authority obeyed him willingly and held him in the highest esteem. In 1919 he was created a Commander of the Order of the British Empire. After his long service to his country and King he obtained the customary order of the Volunteer Officers' Decoration.

Bernard James Newmarch returned to New South Wales at the age of sixty-three years, a man rich in experience of the world, keener than ever to use his professional knowledge to the best advantage of his patients, beloved by all with whom he came in contact, humane, level-headed and modest. His term as Honorary Surgeon at the Sydney Hospital was followed by his appointment to the office of Consulting Surgeon. He ceased to teach, but continued to take the keenest interest in students and young graduates. His practice was an immense one and all his patients had faith in their doctor. He was married twice. By his first wife he had three children, two boys and one girl, and by his second wife who survives him, he had one son. Two of his boys distinguished themselves in the field during the Great War. In their father they have a fine example of a true sportsman who achieved success in his professional and social life through hard work, intellectual ability and thoughtfulness for others. He contributed relatively little to medical literature, but avoided the imputation of hoarding a large and valuable experience. He hated the public gaze, but often found himself confronted with it when duty demanded from him a particular service. In his young days he excelled on the football field; in later life he played golf well, was a first class rifle shot and an indefatigable yachtsman.

During his latter years he devoted himself almost entirely to life insurance work as chief medical officer to the Commonwealth Life Assurance Society, Limited. His knowledge in this branch of his profession was profound.

The whole medical profession in the Commonwealth knew Bernard James Newmarch and revered him. And now that he is gone hence they pay homage to his memory and are grateful for having had his precept and influence. The medical profession offers its sincere sympathy to his widow and sons and daughter on the loss of so fine a husband and father and so true a friend.

CUTHBERT ARNOLD VERGE.

AFTER an illness of about a month Dr. Cuthbert Arnold Verge died in Sydney, as already announced in these pages, on March 15, 1929. His death was due to septicæmia following on what was regarded as a small superficial burn on the forearm. His passing has been a serious loss to the ranks of the ear, nose and throat surgeons of the State of New South Wales. He had already been recognized as a clear thinker and as one of the best type of surgeon—one who was not content with the written word of others, but who put his own observations to practical use. He had gained a prominent position for himself and would undoubtedly have attained greater eminence had he not been cut off at a comparatively early age.

Cuthbert Arnold Verge was born at Kempsey, New South Wales, on May 28, 1882. He was the son of Mr. Austral Verge of that district. At The King's School he was prominent both in the class room and in the playing fields, and when the time came that he should leave school, he showed his strength of character by deciding to study medicine when he might have followed a life of comparative ease and comfort. At the University of Sydney he took an active part in sport and at the same time pursued his studies with diligence. He played "A" grade tennis and represented his university in the football field both in Australia and New Zealand. In this he followed in the footsteps of his brother, Arthur Verge, the noted "full back," also a graduate in medicine, who died in Egypt during the early stages of the war. In 1910 he graduated, taking the degrees of Bachelor of Medicine and Master of Surgery. On graduation he became Junior Resident Medical Officer at the Royal Alexandra Hospital for Children; he held this position for six months and then joined the staff of the Royal Prince Alfred Hospital as Senior Resident Medical Officer. During his term of office at the Royal Prince Alfred Hospital (fourteen months) he paid special attention to diseases of the ear, nose and throat and thus laid the foundation of his future work. After leaving the Royal Prince Alfred Hospital he travelled to Europe where he spent two years in post-graduate work. In London he worked at the Golden Square Throat Hospital, the London Throat Hospital, King's College Hospital, the London Hospital and the Queen's Hospital for Children. He was Medical Superintendent of the Queen's Hospital for Children for eight months and had charge of

the Ear, Nose and Throat Department. From London he went to Vienna and studied under Bondy, Leidler, Beck, Ruttin, Hirsch, Hajeck and Marschick.

At the outbreak of war Verge was in London. He joined up with the Royal Army Medical Corps and was sent away as a member of the Mediterranean Expeditionary Force. He saw service in Mesopotamia and took part in the campaign for the relief of Kut. Later on he joined the Australian Army Medical Corps and was drafted to France. He served with the Second Australian General Hospital and with other Australian units both in France and England. His work here was thorough, as it had always been, and it was particularly noticeable that he treated his patients with kindliness and consideration; he looked upon them as sick men and not as mere units in a big machine. His cheerful optimism was ever to the fore. After the armistice he studied in the United Kingdom for a while and became a Fellow of the Royal College of Surgeons of Edinburgh.

On his return from active service Verge was associated for a time with the Lewisham Hospital and then secured an appointment on the honorary staff of his old hospital, the Royal Prince Alfred Hospital. As an assistant ear, nose and throat surgeon he found plenty to do and he made good use of his opportunities. He devised an original method of approach to the ethmoid cells and described it in an article contributed to this journal. He took an active interest in the Ear, Nose and Throat Section of the New South Wales Branch of the British Medical Association.

During the last few years Verge's interests apart from his professional work were confined mainly to golf and tennis. He was a member of the Royal Sydney Golf Club and as a member of the Australian Jockey Club he took an interest in horse racing. A friend has stated that his chief interest was his home. He married Alix, daughter of Mr. H. W. Mackay, and two sons were born of the union. The sympathy of the medical profession is offered unreservedly to his widow. To his two small boys he has left an example and a good name which cannot fail to be an inspiration to them in the years to come.

FOSSEY JAMES NEWMAN.

WE regret to announce the death of Dr. Fossey James Newman which occurred at Geelong, Victoria, on March 28, 1929.

BENJAMIN ROBERT RICHARDS.

WE announce with regret the death of Dr. Benjamin Robert Richards which occurred at Box Hill, Victoria, on April 1, 1929.

Congress Notes.

THE AUSTRALASIAN MEDICAL CONGRESS.

THE Executive Committee of the third session of the Australasian Medical Congress (British Medical Association) calls attention to the necessity for early application for membership. The session will be held in Sydney from September 2 to September 7, 1929. The application forms, accompanied by a cheque for subscription, should be addressed to the honorary secretary in the State in which the member resides. On receipt of the application information in regard to accommodation in Sydney will be supplied together with particulars compiled by the New South Wales Tourist Bureau. The subscription for members of Congress is two guineas, except for members of the New South Wales Branch who qualified prior to January 1, 1925. The subscription of these members is three guineas.

Honorary Secretaries.

The following is a list of the honorary (local) secretaries in the several States of Australia and parts of the Dominion of New Zealand.

Australia.

New South Wales: Dr. R. H. Todd, 30-34, Elizabeth Street, Sydney.
Queensland: Dr. E. S. Meyers, B.M.A. Building, Adelaide Street, Brisbane.
South Australia: Dr. R. L. Thorold Grant, 219, North Terrace, Adelaide.
Tasmania: Dr. J. H. B. Walch, 171, Macquarie Street, Hobart.
Victoria: Dr. F. L. Davies, Medical Society Hall, East Melbourne.
Western Australia: Dr. J. J. Holland, A.M.P. Buildings, William Street, Perth.

New Zealand.

North Island: Dr. L. A. Spedding, 15, Remuera Road, Auckland.
South Island: Dr. R. A. H. Fulton, 2, Pitt Street, Dunedin.

Official Delegate of the British Medical Association.

The President of the British Medical Association, Sir Ewen Maclean, will visit Australia for the purpose of attending the third session of the Australasian Medical Congress as the official delegate of the British Medical Association. An announcement will be made at a later date in regard to the dates on which Sir Ewen Maclean will arrive at the several ports of call on his way to Sydney.

Accommodation at the Medical School.

Professor Leslie Wilkinson has kindly prepared a set of plans of the Medical School of the University of Sydney. These plans have been of great service to the Joint Honorary Secretaries, Dr. A. A. Palmer and Dr. T. W. Lipscomb, in the work of allocating rooms to the several sections. In this work they have obtained the assistance of Professor D. A. Welsh. It is hoped that each section will be housed conveniently in a room suitable to its requirements. An effort has been made to place all the sections on the ground floor and the first floor. Ample provision has been made on the ground floor for telephone, post office, cloak and parcels rooms for the convenience of members.

Ladies' Committee.

Mrs. G. H. Abbott will shortly convene a meeting of ladies interested in making the social side of the session a success. The meeting will be held at the B.M.A. Building, 30-34, Elizabeth Street, Sydney. Those ladies who are desirous of assisting Mrs. Abbott, are invited to communicate with Dr. Abbott, 185, Macquarie Street, Sydney.

THE EDWARD HENRY EMBLEY MEMORIAL.

WE have been requested by the Edward Henry Embley Memorial Committee to announce that the following subscriptions, totalling £113 9s., have been received by the Honorary Treasurer:

A. V. M. Anderson, W. R. Boyd, K. Hiller, Sir George Syme, £5 5s. each.

F. J. Drake, £3 3s.

F. D. Bird, F. J. Bonnin, J. V. Guest, Hood and Company (F. W. White and S. Baird), J. W. D. Hooper, J. P. Hogan, R. W. Hornabrook, B. Kilvington, G. L. Lillies, Alan Mackay, J. F. Mackenzie, M. H. Mailer, L. A. E. Maxwell, W. J. McCaw, J. Newman Morris, J. E. Nihill, Walter Summons, E. W. Sutcliffe, J. F. Wilkinson, B. T. Zwar, £2 2s. each.

D. C. Nance, F. L. Nance, J. L. Thompson, £1 1s. 6d. each.

R. Marshall Allan, Sir J. W. Barrett, C. Bage, G. A. Birnie, J. J. Black, L. J. Clendinnen, E. R. Cordner, W. J. Craig, H. B. Devine, H. C. Disher, C. P. Dyring, C. M. Eadie, R. H. Fetherston, C. Friend, R. Howden, Victor

Hurley, W. W. S. Johnston, J. H. Kelly, R. A. Manly, Mrs. Mathison, F. E. McAree, F. Meyer, C. H. Mollison, V. P. Mondon, F. W. W. Morton, T. V. Nihill, J. A. O'Brien, W. A. Osborne, M. B. O'Sullivan, Christina Reid, S. F. Ridley, D. Rosenberg, R. H. Russell, G. C. Scantlebury, M. D. Silberberg, H. P. Sloggett, Aren Stephens, H. D. Stephens, R. R. Wettenhall, A. M. Wilkinson, W. E. Wilson, £1 1s. each.

Constance Ellis, 10s. 6d.

W. F. Brownell, 10s.

Intending subscribers to this memorial are reminded that subscriptions should be forwarded to the Honorary Treasurer, Dr. C. H. Mollison, 41, Spring Street, Melbourne, before April 15, 1929.

Books Received.

MEDICAL AND ALLIED TOPICS IN LATIN POETRY, by Heinrich Oppenheimer, D.Lit., LL.D., Ph.D. (London), M.D. (Heidelberg), M.R.C.P. (London); 1928. London: John Bale, Sons and Danielsson, Limited. Demy 8vo., pp. 452. Price: 30s. net.

THE PRACTICAL MEDICINE SERIES, COMPRISING EIGHT VOLUMES OF THE YEAR'S PROGRESS IN MEDICINE AND SURGERY: Obstetrics and Gynæcology; 1928. Chicago: The Year Book Publishers. Crown 8vo., pp. 688, with illustrations. Price: $2,50 net.

Diary for the Month.

April 16.—Tasmanian Branch, B.M.A.: Council.
April 16.—New South Wales Branch, B.M.A.: Organization and Science Committee.
April 16.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
April 17.—Western Australian Branch, B.M.A.: Branch.
April 23.—New South Wales Branch, B.M.A.: Medical Politics Committee.
April 23.—Illawarra Suburbs Medical Association, New South Wales.
April 24.—Victorian Branch, B.M.A.: Council.
April 25.—South Australian Branch, B.M.A.: Branch.

Medical Appointments.

Dr. Frank Edward Gallasch has been appointed Acting Honorary Medical Officer at the Barmera Hospital, South Australia.

* * *

Dr. C. Gordon Wells (B.M.A.) has been appointed Officer of Health for the hundreds of Maitland, Kilkerran and Wauraltee, South Australia.

* * *

Dr. Norman R. Matthews (B.M.A.) has been appointed Officer of Health for the hundreds of Cunningham and Muloowurtie, South Australia.

* * *

Dr. Alfred Ladyman Tostevin (B.M.A.) has been appointed Honorary Clinical Assistant to the Ophthalmic Department of the Adelaide Hospital.

* * *

Dr. Francis John Burns (B.M.A.) has been appointed Government Medical Officer at Ganmain, New South Wales.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xx, xxi.

New South Wales Branch of the British Medical Association: Medical Secretary.
Perth Hospital, Western Australia: Pathologist.
The University of Melbourne: Chair of Obstetrics.
Victorian Eye and Ear Hospital: Resident Surgeons (Three).

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
New South Wales: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company, Limited. Phœnix Mutual Provident Society.
Victorian: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
Queensland: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Stannary Hills Hospital. Boonah District Hospital.
South Australian: Secretary, 207, North Terrace, Adelaide.	All Contract Practice Appointments in South Australia. Booleroo Centre Medical Club.
Western Australian: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
New Zealand (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Medical practitioners are requested not to apply for appointments to position at the Hobart General Hospital, Tasmania, without first having communicated with the Editor of The Medical Journal of Australia, The Printing House, Seamer Street, Glebe, New South Wales.

Editorial Notices.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary be stated.

All communications should be addressed to "The Editor," The Medical Journal of Australia, The Printing House Seamer Street, Glebe, Sydney. (Telephones: MW 2651-2.)

Subscription Rates.—Medical students and others not receiving The Medical Journal of Australia in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance.